THE Journal

MAY

1955

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from Europe, Asia, the Philippines,
South Africa and Latin America

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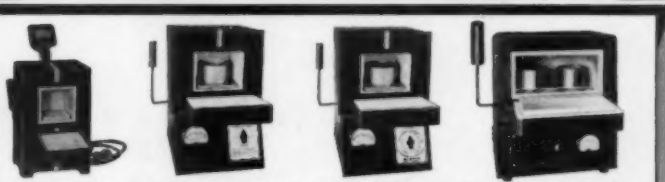

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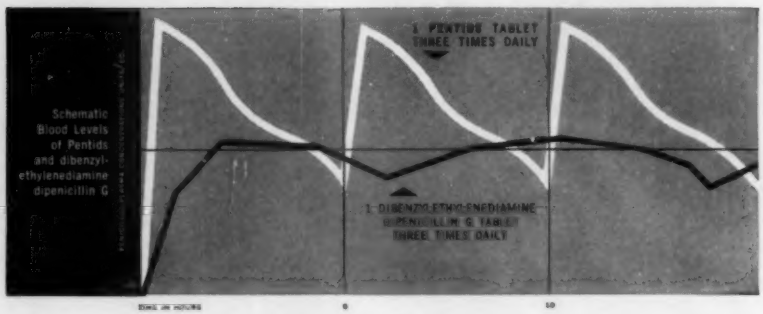

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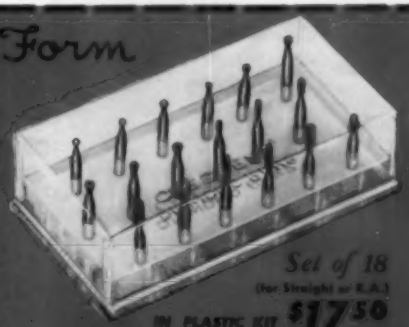

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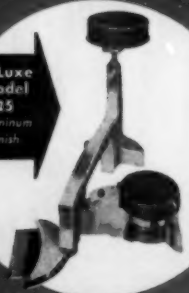

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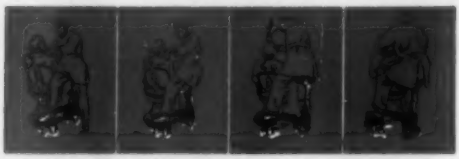

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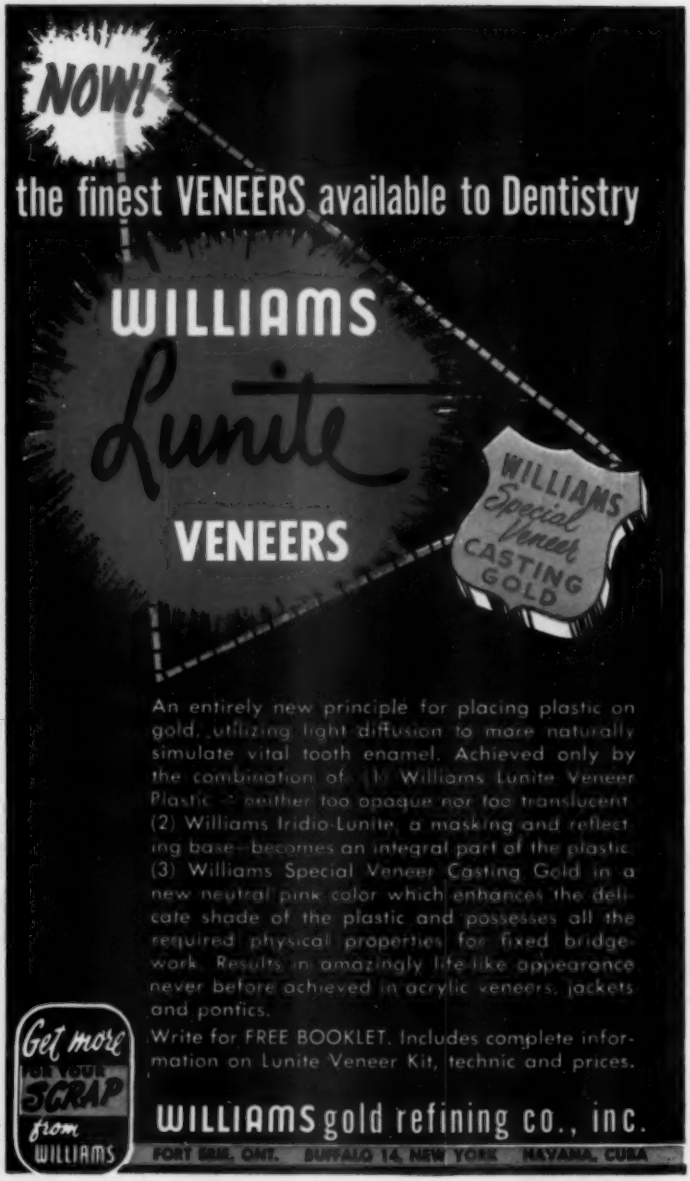
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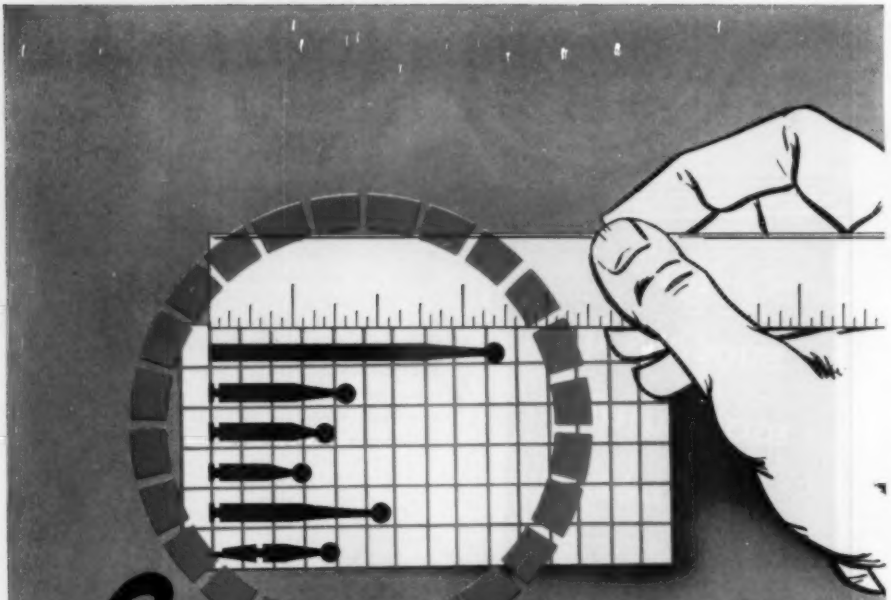

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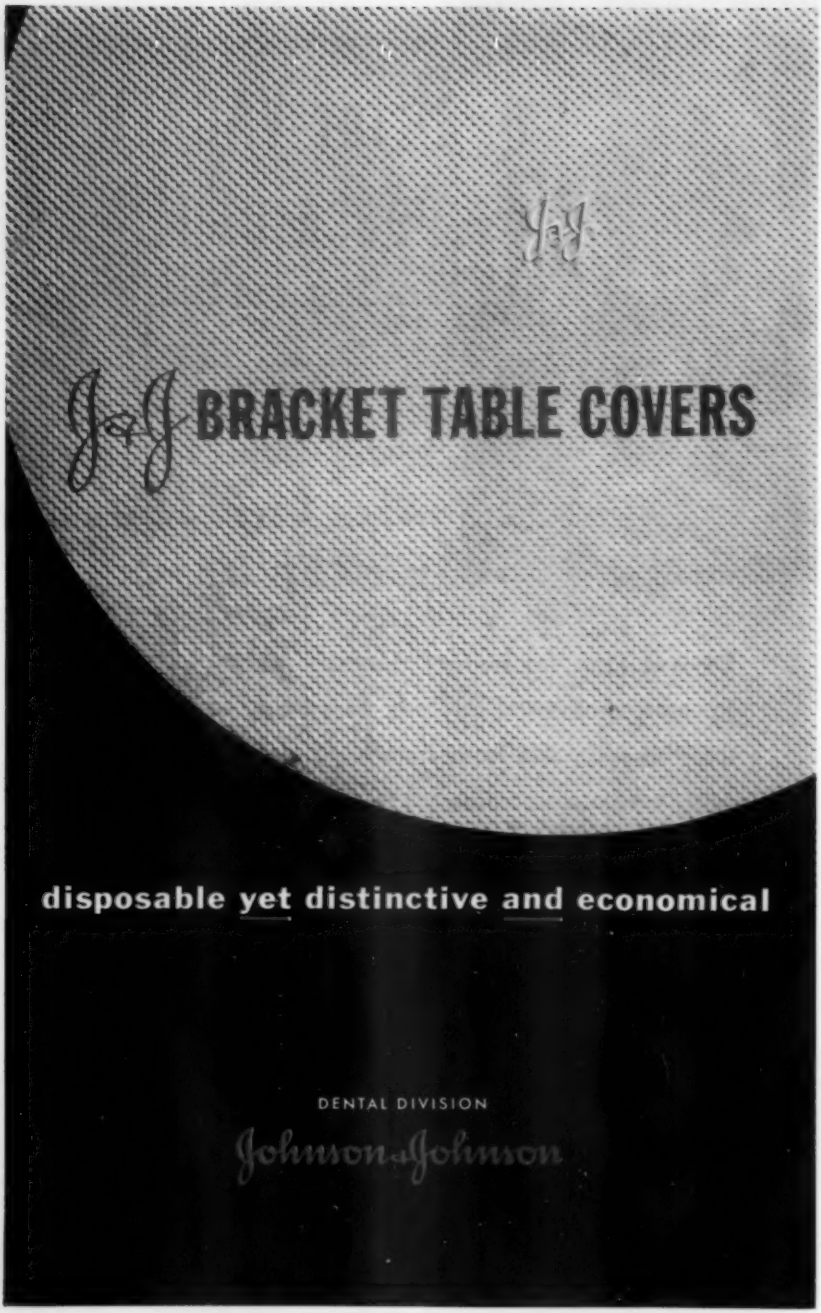
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Dental education in Great Britain

A. M. Horsnell, L.D.S., F.D.S.R.C.S., M.R.C.S., L.R.C.P., London, England

Dental education in Great Britain as well as in the United States refers to the undergraduate, but the term also includes the education of the qualified practitioner and the community. Some of the main facts concerning Great Britain's system of dental education, the changes that have occurred in the postwar period and some of the possibilities for future development will be of interest.

It might be wise to bear in mind the following:

1. In America about 2,500 graduate from dental schools each year compared to 500 to 600 in Britain. There is one dentist to every 1,800 persons in America, whereas Great Britain has only one to approximately 3,600 persons.[1]

2. The British Dental Association was set up as a scientific society and in the past has influenced government policy little; in fact until 1949 there were three dental associations. The American Dental Association, I understand, has had a considerable influence for a long time.

3. The Council on Dental Education of the American Dental Association is executive, whereas the Dental Education Advisory Council in Great Britain consists of the administrative heads of schools who meet to discuss common problems, is not executive and is not a part of the British Dental Association.

4. The degrees and qualifications in Britain must comply with the recommendations of the General Medical Council; Britain has no State Boards of Dental Examiners.

Each of the 17 dental schools in Great Britain is attached to a university. This relationship was established approximately 50 years ago but has become much closer in the postwar years. One result

Presented before the Dental Health Section of the American Public Health Association, Buffalo, October 12, 1955.

Dental sub-dean and director of conservative dentistry, London Hospital Dental School, University of London.

1. Peterson, Shailer. Dental education in the United States. Internat. D. J. 2:158 Dec. 1951.

of the closer association between the universities and dental schools is that the schools now appreciate their responsibility to carry out research, and suitable departments for this purpose are being developed.

The size of the schools varies considerably; the largest schools take in approximately 100 students a year, and the smaller ones, 20 to 25.

Students in most instances take the degree of the university of which their school forms a part. The degree course covers five and a half years. Britain now has a common school-leaving certificate, the General Certificate of Education at Ordinary Level. The General Certificate of Education at Advanced Level is taken after a further two or more years' study, and in the case of those proceeding to a special course, such as dentistry, medicine, engineering and so forth, the subjects taken then would be those required by the particular Faculty.

In the dental course, the first academic year is devoted to predental studies, such as chemistry, physics and biology; the requirements of the examination in these subjects is the same for dentistry and medicine. They may be taken within the school, but in many universities exemption from the first year study and examination can be gained through the advanced level examination of the General Certificate of Education.

The second year is spent on the basic sciences, such as anatomy, physiology, biochemistry and special, or applied, anatomy. The third academic year is devoted mainly to prosthetics, which does not include crown and bridge, and dental mechanics. The subsequent two and a half years are spent on the remainder of the clinical subjects, such as conservative dentistry, periodontology, children's dentistry, orthodontics, local anesthesia, general anesthesia, extractions and so forth. During this time students also have lectures in medicine and surgery and receive instruction in the medical and surgical outpatient departments and other special departments of the general hospital with which the school is associated.

Since the war an increase in postgraduate study has been noted, and further higher qualifications have been recognized by the General Medical Council. Dental schools and hospitals now expect applicants for their appointments to hold one of these higher degrees or qualifications.

The Institute of Dental Surgery, which is closely associated with the University of London, the Royal College of Surgeons in London and the Postgraduate Medical Federation, has been established and has a program of postgraduate education.

The Royal Colleges, which have a long association with dentistry, are concerning themselves more deeply with postgraduate education. For example, they have established their own dental Faculties and examinations for the Fellowship in Dental Surgery.

The National Health Act of 1948 made provision for postgraduate refresher courses, such courses to be run by the universities in conjunction with the Ministry of Health. These courses have the support of the British Dental Association and are being initiated.

Before the war the main bulk of teaching was carried out by part-time visiting staff, and the full-time personnel in many schools was limited to the professor, although not every school had established a chair in dental surgery. The different attitude which has followed a closer relationship with the universities, coupled with a revision of salary scales, has led more people to be interested in teaching as a career. Considerable assistance in the training of suitable men for these teaching appointments has been given by the Nuffield Foundation through its scholarships and fellowships. More full-time staff provides a necessary continuity in teaching and protects the student from too many divergent views. It must not be

inferred that different views should not be placed before the student. They should have as many as possible, but only when they have matured sufficiently to be able to evaluate them. The majority of graduates from the schools will be engaging in private practice. Those responsible for teaching, therefore, should have some experience of the conditions which their students will meet on leaving the cloistered atmosphere of a dental school. The obvious aim under these circumstances is a proper balance between full-time and part-time staff. It is not difficult to find this balance in the schools in London, but the situation is often different in the provincial schools.

The undergraduate curriculum shows few alterations from 20 years ago except in the amount of time spent on its constituents and the inclusion of periodontology.

The teaching of restorative or operative dentistry is now on a much higher level than before the war. Whether this improvement is the result of wartime contacts, the influence of the many men who have studied in America or just a phase of development is not known.

The use of extraction is more moderate, and there has been a shift from the use of tissue-borne to tooth-borne dentures.

DENTAL PERSONNEL

In the period 1946 to 1950 there was increased enrollment in the dental schools, and this year, it is estimated, over 700 will graduate. The enrollment figures are becoming lower again and will soon be comparable to the period of 1933 to 1939, when about 400 to 500 graduated each year.

In the next few years the number of dentists in practice will be reduced considerably because of retirement and death. At the same time, as a result of the National Health Act of 1948, the dental consciousness of the public undoubtedly has been stimulated, with an increase in the demand for treatment. Under these circumstances the number of applicants now seeking entry to our schools cannot be considered satisfactory.

Recruitment to the profession is intimately concerned with dental education of the public; the term recruitment is used in its broadest sense. A fuller appreciation of the benefits of dental health and the cost of dental disease automatically produces a greater demand for trained personnel. Greater dental consciousness would raise the status of dentistry, and if the status were raised, undoubtedly the number of recruits similarly would be raised.

There is without doubt in Great Britain a new attitude to dental health which may constitute a challenge to the profession. Consideration of the educational system in Great Britain enables one to discuss some suggestions for augmenting our resources.

Auxiliary Personnel • The dental hygienists were first trained in Great Britain by the Dental Branch of the Royal Air Force in 1942, as a wartime expedient.[2] The dental officers who worked with them and others interested in preventive dentistry soon appreciated the contribution they could make. They are now a recognized part of the dental branches of the three services. The Ministry of Health conducted training courses as an experiment from November 1949 to February 1954. The experiment terminated and those trained are employed to work under supervision in teaching and general hospitals and local authority clinics. If more dental hygienists were trained, dentists would be able to give more and better dental service.

Most chairside, or office, assistants still learn their work in private practice, and the majority of technicians learn theirs

2. Report on dental hygienists, Central Health Services Council, London, Eng., 1951.

under the apprenticeship system. Four schools, however, have courses for chairside assistants, and the polytechnic or evening schools have courses for technicians. When the benefit to be gained from the employment of a basically trained chairside assistant is more widely appreciated, and when the place of science in the work of the technicians is fully realized, so will proper courses become systematized and more widespread.

POSTGRADUATE EDUCATION

Dental education on a professional basis affects postgraduates as well. Many dentists engaged in active practice, even if only middle-aged, may well have been away from a dental school for over 20 years.

Postgraduate education is vital. My own view is that it should be given by persons specially trained and particularly interested in this kind of work. I feel that the undergraduate schools may have been, and may still be, expected to cover too wide an educational field. It is for this reason that one has such high hopes for the Institute of Dental Surgery.

UNDERGRADUATE CURRICULUM

Undergraduate teaching also must be kept under review. It has been suggested that the entrance requirements to a dental school might be made less difficult. It is essential, however, that dentists have the broadest possible knowledge of dental disease and its etiology.

Dentistry has been considered a manual art for too long. Undue emphasis has been placed on manual dexterity before entry to a school. In Norway, where the applications for entry far exceed the number of places available, acceptance of a student is governed only by the marks gained in the school-leaving examinations. There are no interviews and no aptitude tests. Careful observation has been maintained over a period of years, and I understand the general finding to be that those high on the entry list, irrespective of their manual ability at that time, were always among the best at graduation.

If a student has a sufficient quota of brains, the dental schools can teach him dexterity. A person with brains and a broad outlook will be capable of using the best from tradition and experience. He will question where dentistry is going and will have the power to think and the courage to experiment. As a man is known by his friends, so is a profession known by the quality of those engaged in it. It might be better, therefore, to raise the entrance requirements so that any who contemplate becoming a part of the dental profession would judge dentistry by these standards.

A further suggestion might be to shorten the remaining four and a half years of the course. The first of these is devoted to the basic sciences. Over a period of years these have been extended to cover three university terms instead of two terms concurrent with dental mechanics. They are truly basic sciences and, it is believed, cannot fully be understood in less time than at present.

With the expansion of knowledge of dental health, it would be impossible to shorten the three and a half years spent on clinical subjects. Many think that the time now allowed is insufficient.

No alternative is left but to review the arrangement of the clinical years; perhaps the best use has not been made of this time.

It has been mentioned that prosthetics and dental mechanics usually occupy the first clinical year. The time devoted to dental mechanics has been reduced over the years from 2,000 hours to 800. This reduction may be an indication of the trend of dental education to more prevention and an indication that prosthetics, the subject with which dental mechanics usually is associated, at last is recognized as the sign of failure to pre-

vent or arrest dental disease. It is more likely, however, that the reduction in dental mechanics is simply the result of additions to the course in other places, and with the impossibility of lengthening the course there has been a reduction in the only subject on which too much time had been spent.

Pedodontics • The surest way to educate a population in dental matters is to give good treatment to the proper section of it. When the Norwegians instituted their public dental services they were faced with the problem of whether they should try to cover the whole population or concentrate on the younger members. They chose the children, and as a result in approximately two decades have a population that is conscious dentally.

If full and early treatment is to be given to the children, then pedodontics must have the proper place in the undergraduate curriculum. When the place of this subject in the curriculums of British dental schools is considered, the following are found to be traditional:

1. The majority of the patients are those referred to the clinics of the teaching hospitals either because of some gross pathologic condition, or more often because they cannot be handled by outside practitioners.

3. The students have been taught the diagnosis and treatment of malocclusion; however, it has not been emphasized that approximately 50 per cent of the patients are suffering from man-made conditions.

Some of the dental schools in Great Britain now look after the children of a particular primary, or grade, school. By such means an undergraduate would have a chance of seeing and treating this more average cross section of the child population.

London Hospital Dental School • For some years considerable study has been given to the curriculum in the London Hospital Dental School, and particularly the place in it of children's dentistry. The conclusions reached follow. It must be emphasized, however, that this information applies only to the one school.

The children's dressership came late in the curriculum and thus all were assured that the trainee had acquired adequate manual dexterity before undertaking restorative treatment on these patients. The patients usually were those receiving orthodontic treatment.

On closer examination it became obvious that the students were merely fulfilling the minimum requirements and that only in isolated instances did they, or their young patients, gain any real benefit from the dressership.

It was considered that the dressership, being placed late in the course, might be giving the impression that there was something difficult about the treatment of children. The curriculum was altered and the students' first contact with children was moved forward by about one year. It was found that the dressers and the patients derived greater benefit and enjoyed it more.

Finally, some two or three years ago, pedodontics became the first dressership for as many as it was possible to place in the clinic. There is no question but that these trainees have shown by far the greatest aptitude for children's dentistry, that the patients have received their dressers with greater enthusiasm and less reserve and that more full treatments and follow-up visits have been made. It has been noted that these dressers have turned out a much improved standard of general restorative dentistry.

The rearrangement in connection with children's dentistry showed how inadequate was the traditional phantom head course. The students' introduction to the patients had to be concurrent with their learning of conservative technics, and no extra time was available. Many unnecessary technical procedures were eliminated. An introductory course was created in which periodontology, clinical

examination routine with children as patients, instruction in local anesthesia and the modified phantom head course were run together. At the same time, students acted as dressers to their more senior colleagues in the conservation department.

The basic sciences and the introductory course, however, still were separated by the year spent on dental mechanics and prosthetics.

Recent alterations in the regulations of the University of London gave greater freedom to each of its five schools and facilitated experimentation in the layout of the curriculum. At the beginning of this academic year, therefore, the children's dressership was brought forward again. It will, of course, be preceded by the introductory course, but to all intents and purposes will now follow immediately after the basic sciences. By a simple reallocation of order and no reduction in hours, it will be possible to maintain a biological background throughout the whole five and a half year course. Students will progress directly from their studies of physiology, anatomy and embryology to the clinical observations of growth and development. The arrangement of the course will introduce them in a logical way to dental pathology. Some 18 months to 2 years after they have left the basic science course, when they know about preventive dentistry, periodontology and restorative procedures, they will be taught what to do in the event of failure to prevent or arrest dental disease in the course dental prosthetics. Finally, they will have a year or more in which to practice all aspects of dentistry concurrently. Dental mechanics will be taught as an adjunct at the same time as clinical prosthetics.

This is an experiment in dental education, an experiment which will be watched with great interest by many of our colleagues and friends.

Science • Besides ministering to our comfort, science also serves to satisfy certain needs of the human spirit. It helps us to understand the world and to feel at home in it. We are distressed by disorder, and always try to arrange in order the things with which we have to deal, whether they are the affairs of a nation, the books in the library, or our own ideas. Science satisfies us because it shows us that, behind the transient and confused pageant of nature, there is a permanent and orderly reality. And it was in the sky that this order was first revealed to men on a vast and spectacular scale. *A. Armitage, "Sun Stand Thou Still," 1946.*

Status of dentistry in Germany

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Dentistry in the domain of the Federal Republic of Germany is undergoing a fundamental reorganization which was stipulated by the "Law Concerning the Practice of Dentistry" dated March 31, 1952. It is not easy to give groups in other countries a clear picture of the development which led up to the present status of dentistry in Germany. In order to do so, it is necessary to outline briefly the events of the last few decades, because only through knowledge of this continuum of events is it possible to evaluate the present situation or to make a prognosis for the future.

The early history of dentistry in Germany differed little from that in other countries. The conditions characteristic to Germany can be traced back to the legislation passed by the German Bund in 1869, when the "Law of Trade Freedom" was passed which extended also to the field of medicine. Since that time there has been the concept of "freedom to treat" in Germany. This meant that the medical professions were not duty bound to treat every patient; rather, it was up to the judgment of the individual physician or dentist as to whether he would undertake the treatment. This freedom of the medical profession was dearly paid for, however, inasmuch as any person who desired to treat had the right to practice in all fields of medicine, including dentistry, without obtaining government approval. If the legislators, who decided on freedom of treatment in 1869, believed that the people would be able to distinguish the good from the bad and would consult only licensed personnel, they were deluded. Medicine and dentistry suffered only disadvantages from the freedom given them, because, on the basis of "freedom to treat," numerous people without training and without license went into the practice of medicine. It can readily be understood why, after these amateurs had united in organizations, the medical professions attempted repeatedly to stop the development and to control the situation in other ways.

In the dental field, this situation meant that the legally approved dentists were substantially outnumbered by the dental practitioners, or *Zahnkünstlern* (dental artists) as they called themselves, who practiced dentistry based solely on mechanical principles. Eventually there were two large professional groups in Germany—the university-educated dentists (*Zahnarzt*) and the mechanically trained technicians (*Zahnkünstler*). The latter, at the beginning of the century, assumed the designation *Dentist* (which cannot be translated as "dentist" since the German word *Zahnarzt* corresponds to the English word "dentist") without being seriously challenged by the authorities.

This development, which meant prac-

President, Dental Federation of Western Germany.

tically a consolidation of the nonlicensed professional groups, was advanced substantially by the introduction of German social legislation. The social health insurance, which went into effect in 1883, had not yet considered the possibility of dental care for the insured. This changed in the course of the next decade, however, when dentistry itself gained ground. In the years 1909 to 1912, violent sociopolitical arguments ensued as a result of the passing of inclusive legislation concerned with social insurance—that is, the "National Insurance Regulations."

In that part of the law concerned with health insurance, the right of the insured to dental care was established for the first time. Since at that time the number of dentists was insufficient to guarantee dental care to the members covered by health insurance, people turned to those dental technicians who practiced not only in the prosthetics field but also in operative and surgical fields. To be sure, these nonlicensed practitioners were restricted to a limited practice and were prohibited from treating oral and maxillofacial diseases; however, the very fact that this law gave them a function strengthened the case for the group considerably. They were not substantially restrained by the law, although it explained precisely that treatment by the nonlicensed "could take place only in exceptional cases and only with the consent of the insured."

Such a situation naturally will not remain static. The next step was the introduction in 1920 of a governmental examination for *Dentisten* who wanted to practice within the structure of social health insurance. This development was strongly opposed by the university-trained dentists. The result was sharp disagreement between the two groups both in public and in court; however, the development could not be halted.

In 1925 an attempt was made to force the issue by proposing a law that provided that qualified dental technicians would receive the dental license by wholesale action. From then on only state-licensed dentists would be permitted to practice within the organization of social health insurance. The attempt failed for various reasons, not the least being that a very active group of dentists *(Zahnärzte)* sharply resisted this partial solution and even demanded the elimination of "freedom to treat."

During Hitler's time, attempts were made to solve the problem; however, Hitler personally lent his support to the so-called "dualism in the field of dentistry." Practically this meant a promotion for the unlicensed group and resulted in other legally-based positions for them.

It is impossible to pass judgment on this question without taking into consideration the fact that the sharp competition between the two groups which developed after the legal recognition of the dental technicians (*Dentisten*) forced the technicians to increase their efforts to raise their educational standards and bring their accomplishments up to the level of the dentists (*Zahnärzte*). As a result, the training of the *Dentisten* was improved continually. Institutes were established without governmental help which each *Dentist* had to attend, and in the end he had to pass a final state examination. As time went on there was considerable similarity in the legal foundation as well as in the training and ability between the licensed and nonlicensed dental practitioners. It was therefore understandable that after the capitulation in 1945, efforts were made to eliminate the dualism and to stop the decades-long struggle between the two groups. The occupation powers, however, were unable to solve the problem.

In 1949, when the first government of the Federal Republic of Germany was formed, the preparations for a solution of the problem had progressed to the point that the dentists and the *Dentisten* were able to propose to the federal government a bill which had been agreed on by both organizations. This bill formed

the basis for the law of March 1952 that led to a complete reorganization of dentistry in Germany.

The law defined the practice of dentistry as follows:

> Practice of dentistry is the diagnosis and treatment of diseases of the teeth, mouth and jaws based on professional and scientific dental knowledge. Disease is considered to be that condition which deviates from the normal in the region of the teeth, the mouth, and the jaws, and includes also anomalies in teeth alignment and the absence of teeth.

In this formulation it was declared for the first time in German law that the absence of teeth was considered a disease. Since the law fundamentally confined the practice of dentistry to university-trained dentists, it signified the ultimate elimination of the dual system. Moreover it was no longer possible for technically trained *Dentisten* to carry out prosthetic treatment, since such treatment, of course, was limited to the licensed dentists. The practicing *Dentisten,* however, were given an opportunity to acquire a dental license. The bestowing of this license by the government had as a prerequisite the participation in continuation courses which were concerned primarily with mouth and jaw diseases as well as with knowledge regarding the dispensing of medicines.

More than 95 per cent of the established *Dentisten* (about 15,000) have availed themselves of the opportunity to become dentists (*Zahnärzte*), so it can be said that the problem of dualism has virtually ceased to exist. The reorganization is so comprehensive that a fair chance is offered also to the entire rising generation of *Dentisten* to become dentists. To be sure, the requirements have been made equal to those which the university-trained dentist must fulfill. The institutes held for the education of the *Dentisten* are conducted by the dental organization. The examination, however, must still be taken before the state board of examiners.

In addition, the law provides transitional regulations which establish the "well-won right" of those who have practiced dentistry heretofore (on the basis of freedom to treat), and it allows them to practice during their lifetime to the same extent that they have in the past.

It might help to clarify the situation to describe the course of education given to the dentists (*Zahnärzte*) and *Dentisten.* The university-trained dentist is educated at a University Dental Institute on the basis of a curriculum which was set up in 1909. The course consisted of a preclinical section of three semesters and a clinical section of four semesters. After the first part of the course, a preliminary examination must be passed, and at the end of the seven semesters, the dental state board examinations. If the dentist wants to attain the degree of D.M.D., he must study an additional semester, making eight altogether. The academic training in Germany does not resemble that in the United States in that it gives the students more freedom in the selection of courses. However, the requirements have so greatly increased during the past decade that the student is forced to use his academic freedom wisely.

The training of the *Dentisten,* who are disappearing as a professional class, was regulated in such a way that the candidate, after an aptitude test, received three years of basic training in dental technic with a dental employer-teacher. This training was augmented by the legally prescribed obligation to attend a vocational school. After the basic training, the *Dentisten-Praktikant* practiced for two years as a *Dentisten-Assistent,* after which time he attended an institute for one year. After passing the state examination, the candidate still had to attend a continuation school for a year, at the end of which time the government-licensed *Dentist* could practice independently.

It is difficult for the reader in other countries to understand what is signified by the terms *Zahnarzt, Zahntechniker*

and *Dentist*. This was evident when the occupation authorities attempted to set up regulations. Up to that time there had been two types of dental technicians. Originally the dental technicians had been employed in the laboratory as auxiliaries to the dentists. After 1869, however, they practiced dentistry for the greater part by themselves. Consequently the social legislation (the national insurance law) speaks only of dental technicians (*Zahntechniker*). When, during Hitler's time, the order was promulgated that these *Zahntechniker* should be designated in the future in official nomenclature as *Dentisten*, the text of the law was not changed and it remains unchanged to this day. The confusion became worse since the group of dental technicians who did not engage in actual treatment found a legal basis in the handicraft guild regulations. It is, therefore, understandable that this confusion of nomenclature in the field of German dentistry can be comprehended only by those thoroughly familiar with the whole situation.

This confusion benefits the guild of dental technicians. Large groups of them have not confined themselves to making prostheses in the laboratory for the dentists. They have either openly or secretly fitted these dental prostheses directly in the patients' mouths. This possibility is now denied them by law; nevertheless, they are presently trying to establish legally that the fitting of removable prostheses is a mechanical service and not a dental treatment measure. The courts throughout the country are attempting to clarify this question; however, the text of the law is so clear that it is anticipated that prosthetics will be considered as a branch of dentistry and will not be reduced to a mechanical level.

Of course, not all dental technicians practice prosthetic dentistry on patients; many more largely confine themselves to the preparation of tooth replacements prescribed by the dentists. There are commercial laboratories that range from one-man shops to wholesale laboratories with a staff of 50 to 100 employees. More and more dentists are using the services of the commercial dental-technical laboratories, while the number of dentists who have their own laboratories is decreasing. Obviously, the dentists will utilize only the laboratories whose owners do not treat patients, even if such treatment is confined to the prosthetic field. The relationship of the dental organization to the union of the commercial laboratories is excellent. To an increasing degree, the dental associations are taking charge of the training of the dental laboratory technicians.

Soon after the passage of the law concerning the practice of dentistry, the interested professional groups joined together in a single organization, the Federation of German Dentists. This is an "association of organizations"; that is, it unites the independent organizations which exist in the separate states of the Federated Republic of Germany. Thus it indirectly includes all of the 31,000 German dentists. Because of this organizational structure, the Federation can fulfill its function only with the help of the affiliated professional representatives of the states. The organizational structure in the separate states is not uniform. There are dental societies which take in all the dentists of a state on a legal basis and there are also what might be termed "voluntary" societies.

Up to the time of the partitioning of the German nation there was a central legally-based organization of dentists who practiced within the framework of the social health insurance—the "panel dentists." After the elimination of the central office, the function of this central organization was transferred to the corresponding organization in the states. Conceivably in time a "Federation of Panel Dentists" will be set up through a new legal regulation, but this will correspond in structure to the present Federa-

tion of German Dentists and will have no real authority.

In order to cope with the problem of the flooding of the market with pharmaceuticals, including those that are especially designed for dental use, the Federation of German Dentists set up a dental drugs committee that works in close cooperation with similar organizations of physicians and pharmacists. In the near future a drug-testing agency will be set up that will test and supervise certain pharmacological products. This drug-testing agency will be the forerunner of a materials-testing agency which will be similar to one that existed formerly. The dental Federation has learned from the experiences of the National Bureau of Standards in Washington. Conditions in Germany, particularly the lack of funds, preclude the creation at present of such an establishment as that of the National Bureau of Standards. The materials-testing agency will be coordinated into a division that will check all recent technical innovations that are designed to facilitate the work of the dentist with regard to their effectiveness, suitability and, last but not least, their price. Such a committee has already existed within the framework of the dental organization.

The relationship of dentists to one another as well as to the authorities and the public is regulated by rules and a code of ethics self-imposed by the dental profession. Of course, these regulations vary in the different states, but the basic principles are the same. The Federation of German Dentists recognizes the idea of dental specialists, but this title is used only for the specialty of orthodontics (Kieferorthopädie). In addition to his regular dental education, and after he has passed his state dental board examination, the orthodontic specialist must have three years of specialized training in the field. Also he must confine himself to his specialty.

Because of this restriction, specialists are found only in the larger cities, while in the medium-sized and smaller towns the orthodontic care is furnished by general practitioners. The leaders of the dental organization realize the need for increasing the knowledge of general practitioners with regard to orthodontics; therefore, postgraduate courses have been established so that the orthodontic needs discovered in the routine examination of school children can be met.

For many years the dental health programs in the schools have been famous. During the last war, however, the organization which had been built up over decades was virtually destroyed. For some time, though, the participating groups (civic authorities, social insurance agencies, dental societies, and others) have been actively laying the foundation for a reorganization in this field. They want to enlarge the program so as to include not only school children but young people as well. A systematic youth dental care program undoubtedly will be created by legislature, which will include examinations for young people from 3 to 18 years of age. The groundwork for such a program has already been laid. Several hundred pedodontists are on the panel; however, the pedodontists will not treat the children. They will make the examinations and will participate in the management of the program. The treatment of the patients will be done by the dentists in private practice.

Of special significance to the German dentist is social insurance, particularly social health insurance, since 80 per cent of the total population is covered by such insurance. Part of the remaining 20 per cent are cared for by private health insurance and the very small remaining group by the public welfare agencies of the respective cities. The plan originally was conceived in order to care for those who, because of their economic condition, were not able to plan for the vicissitudes of life. Social insurance has developed into a giant system, however—a state

within a state. It is now a completely established self-governing structure.

Not all dentists are allowed to practice within the framework of social insurance, that is, treat members who come under the sick funds. He needs a special admission license which is decided on the basis of an "authorizing" procedure that is founded on a complicated legal arrangement. According to the admission regulation, one dentist is provided for 1,500 insured. A new legal ruling that is being considered provides for a decrease of this number to 1,250. Actually at present there are 900 insured to one dentist. The bureaucracy refuses to recognize this *de facto* situation, since it would like to keep the number of "authorized" insurance dentists down to the smallest possible figure. It is thought preferable that there are a small number of extremely busy dentists than a great number of dissatisfied ones. Altogether in the Federal Republic of Germany there are approximately 22,000 active panel dentists, compared with 33,000 panel physicians (general practitioners and specialists). About 6,000 dentists await admission so that the "authorization" problem is a serious burden to the profession, and it especially affects the rising generation of dentists. This naturally leads to increasing friction between the old and the young.

The leaders of the dental profession are striving with all their power to restore the professional freedom of the dentist and to abolish the system of admission. The profession receives little support from the medical men, however, since the problem is still more serious in the medical profession. These difficulties are connected very closely with the fee system which is in operation in social health insurance. With very few exceptions the health funds do not pay for a single medical or dental service, but they pay a lump sum per head of insured. The payment does not even come close to covering the fees for the completed treatment. Therefore neither the dentists nor the physicians find that the fee rates, set up by the government, are paid in full. They receive only a part, often little more than half, of their statutory rates. The relation of the health professions to the members of the health insurance is, therefore, strained, and the public is becoming increasingly concerned. The professions are not sufficiently important politically, however, to achieve a true professional freedom for themselves or obtain a reasonable set of fees.

A legal reorganization is in prospect through a "Law for Regulation of Relations Between the Medical Professions and Health Insurance." On the basis of currently recognized stipulations, the member of the health insurance may have free treatment from a physician and dentist, as well as free hospitalization in case of illness. Moreover, when they are unable to work, a so-called "sick benefit" is paid. The cost of the drugs generally is borne by the insurance fund. Because of this whole system, morbidity is very great; therefore, changes have been considered for years. These changes would include participation of the insured in medical costs, as is done in France, to reduce the incidence of illness. It is very doubtful, however, whether it will be possible to break a tradition, even though it has come to be a nuisance.

In addition to the large Federation of German Dentists and the professional organizations in the states, there are several scientific organizations composed of individual members. The largest is the German Society for Dental, Oral and Maxillofacial Diseases (Deutsche Gesellschaft für Zahn-, Mund-, und Kieferheilkunde). This society, in its turn, has created societies to advance professional interests in the several specialized fields of dentistry. All the influential organizations are united in a society for the advancement of the professional interests of dental associations in the Federal Republic of Germany. This society functions as the national committee for the FDI.

Up to the present, the German dental profession has been able to maintain itself as a homogeneous organization, although, as was described earlier, the scientific organization is separate from the comprehensive component organizations. The two collaborate closely, however, a fact that is not self-evident.

There are about 30 medical organizations in the Federal Republic of Germany; for practically every field of interest there is a special organization. The effectiveness of the medical profession undoubtedly is impaired by this splintering, a circumstance which affects the dental profession also. It has been difficult to unite 15,000 university-trained dentists with 15,000 *Dentisten*. Such unification can be accomplished, however, since the fusion has proceeded during the first year and a half without friction. The dental profession has shown that it can pass this difficult test. The prognosis for the future, therefore, is very good, especially since the erstwhile *Dentisten* were given a fair chance. The elections, held after the unification according to democratic principles, did not lead to sharp arguments and the leadership was given to the university-trained dentists, even in the sections in which they were in a minority.

The postgraduate education of the dental profession is carried out by professional representatives of the states. They have a legal obligation which they have to fulfill. In order to control postgraduate training and to make the best use of available scientists and lecturers, the Federation of German Dentists and the German Society for Dental, Oral and Maxillofacial Diseases maintain an information center which serves as a counseling agency with respect to postgraduate training. Naturally, postgraduate courses are given in cooperation with the University Dental Institutes and with the five teaching institutes of the Federation. There still remains the task of educating the rising generation of *Dentisten*, a task which will be completed in about four years. Then the intention is to maintain an institute or several of these institutes for the postgraduate education of the German dentists.

The leaders of the dental profession are especially concerned over the problem of the future generation of dentists. At the present time there are 1,600 inhabitants to one dentist in Germany. (In the United States, according to our information, there are 1,700 to one.) Since sufficient practice and a satisfactory income are possible only when the dentist practices for the health insurance fund, it means a serious hardship at the moment to approximately 6,000 young dentists who still have no admission to practice for the fund and who, according to the currently valid stipulations, cannot obtain admission for a long time. The leaders of the profession are of the opinion that each physician and dentist who is educated by the state, examined by the state and appointed by it, should have the right to treat each sick person who seeks his help. It is proposed, therefore, that instead of maintaining such restricting stipulations for admission to the health insurance practice, the number of admissions to dental studies should be restricted in order to be able to control the number of dentists in accordance with the actual need. Such a solution is not legally possible at the moment, however, since every citizen has the right to decide on his education and his profession himself.

After the reorganization in the dental field, it was necessary that the outdated provisions for the state dental examination regulations of 1909 be changed. A suitable bill is under consideration at the present time by the law-giving judicature, and it presumably will be passed in a few weeks. This new law provides that the future dentist must study dentistry ten semesters—five preclinical and five clinical semesters. For some time a plan has been under consideration which would limit the actual course to eight

semesters. These would be preceded by two semesters (or better put, one year), during which time the student would be given intensive training in dental technic. For various reasons this plan was dropped; however, the new regulations will provide that each student spend more time on dental technic during the first year. In addition the basic medical education will be improved. During the deliberations over this new law, it was requested by a minority that the future dentist should complete the general medical course first, and that he should then add to this the specialized dental education. This plan, which would be similar to the stomatology courses given in Austria and Italy, received insufficient backing, since the majority of the profession believes that the field of dentistry is so extensive and hence demands such knowledge and ability that it is impossible to learn it in a special course similar to the separate special courses given physicians. A short time ago the medical course was lengthened to 12 semesters in Germany; however, the physician does not receive government recognition or permission to work by himself until after a two year tour of duty as an intern.

It is evident from this description that conditions in Germany are in a state of flux; however, the course which dentistry will take in Germany is distinctly marked off. The dental profession in Germany feels itself strong enough, and it has the necessary drive, to secure its position on the basis of rights already won. It will progress in order to be able to comply with the various demands which the people and the state legitimately make on it.

Universitätsstrasse 73

Dental education in Norway

Knut Gard, Oslo, Norway

Norway has an area of 126,000 square miles and its present population is around 3,400,000. There are 1,900 dentists in actual practice in Norway today. In spite of the fact that the number of dentists is large in proportion to the population, there is a shortage because, among other things, of the geographical distribution of the people. The country is mountainous, large and thinly populated, and the numerous fiords cut deeply into the mainland. These difficult conditions have had considerable influence on dental health education.

School dental treatment of children from 7 to 14 years of age was introduced in 1910 in the largest cities of Norway at public expense. Today, approximately 85 per cent of all school children receive free dental treatment as well as a certain percentage of small children from 3 to 7 years of age. In addition, young people in the age group of 14 to 18 years also receive free or nearly free dental treatment. Therefore, about 500 dentists are fully or partially engaged in public dental service. Naturally, this situation has influenced the teaching of dental students.

At present there is one dental school

in Norway, the Royal Dental College in Oslo. Fifty dentists are graduated annually, but this number is insufficient today because of the conditions mentioned earlier and also because (1) the caries incidence is as high as in most countries with a relatively high standard of living, and (2) the school dental treatment and the dental health propaganda, coupled with a good economy, have created a steadily increasing demand for dental care among the adult population. Consequently, since World War II, plans have been made to build another dental school in the second university city, Bergen.

While this work has been going on, dentists have been educated in suitable schools abroad, and through the friendly assistance of the professional authorities in the countries concerned, a large number of students have been placed, especially in the United States, Sweden, Denmark, the United Kingdom and Germany. These students are selected by the Royal Dental College. The method of sending students abroad, however, is a makeshift solution and is not satisfactory. Everybody agrees that as soon as possible sufficient dentists must be trained at home. Work on the new school in Bergen will start this year, and it is hoped that the building will be ready for use in 1959 at the latest. The Oslo school was built in 1927, and the present intention is to build a new and better school there which will accommodate 70 to 80 students, thus making it possible to graduate 110 to 120 dentists annually in our own country.

The requirement for admission to the Royal College in Oslo is the final school examination, which is passed at the age of 19 to 20. The curriculum at present covers four years, each school year consisting of two semesters—August 20 to December 15 and January 10 to June 24. The curriculum is now divided into eight departments with a professor as head of each department: anatomy, pedodontics, orthodontics, oral surgery, restorative dentistry, physiology, periodontics and full denture prosthetics. There are four assistant professors who give the courses in restorative dentistry, crown and bridge work, elementary prosthetics, and roentgenology. Special lecturers give courses in bacteriology, pharmacology, chemistry, pathology and forensic odontology.

The following subjects are taught: general anatomy, dental anatomy, physiology, nutrition, chemistry, theoretical and practical physics, pharmacology, pathology, bacteriology, forensic odontology, restorative dentistry, prosthetics, periodontics, oral surgery and orthodontics.

Although the total dental course now takes four years, plans are being made to extend it to five years. At the University in Bergen, the intention is to arrange postgraduate courses which will be taken immediately after the regular four years' course.

It is characteristic of dental education in Norway that, because of the conditions mentioned earlier, pedodontics and orthodontics are given an important place in the curriculum. Furthermore, it is characteristic that the Royal Dental College is an independent institution and not a part of a university. This necessitates special departments of anatomy and physiology with their own professors and special lecturers.

The new dental school in Bergen has been planned as a branch of the University, and consequently there will be medical and dental men on the regular faculty.

It will be interesting in the future to see the development of teaching in this country at the two schools, one continuing as the independent Royal college, the other being part of the Bergen University.

Incognito 17

Dental education in Finland

Kalevi Koski, Dr. Odont., Helsinki, Finland

Because of the geographic location of Finland and the difficulties of the language, contacts between the Finnish dentists and those in the rest of the world have been relatively infrequent. Up to recently, such contacts have been limited primarily to practitioners in Scandinavia and Germany. Since World War II, however, Finnish dentists have shown great interest in various aspects of dentistry in countries outside the immediate neighborhood, and contact with the profession in America and England has increased considerably. A few of the younger members of the profession have studied in the United States or in England, and eminent dental representatives from these countries have visited Finland, giving lectures and short courses both in the dental school and to the general practitioners. Since the ties between the dental profession in Finland and that in the United States are strengthening constantly, it may be of interest to American readers to learn something of the methods of dental teaching in Finland.

There is only one dental school in Finland, the Institute of Dentistry in Helsinki. About 60 students enroll annually, which is not an adequate number to meet the dental needs of the country. Since the Institute of Dentistry is already badly overcrowded, the situation cannot be corrected at present. For economic reasons, the establishment of a new dental school, plans for which have been discussed from time to time, does not seem possible in the foreseeable future.

High school graduates who wish to enroll in the dental school go through a six weeks' preliminary selection course in the university in which they study physics and chemistry. It should be noted in this connection that the high school curriculum in Finland is more comprehensive than it is in the United States. The eight year period of high school education in Finland corresponds roughly to high school plus one or two years of college education in the United States. The students are between the ages of 10 and 18.

After the preliminary course is completed, there is an entrance examination in which the students have to submit papers in biology, physics and chemistry. On the basis of the marks obtained in this examination, together with their high school graduating marks, about 30 of the best students are selected each semester, that is, twice a year, for the Medical Faculty of the University of Helsinki.

After acceptance as students for the Faculty, they continue theoretical and practical studies in biology, physics and chemistry for one year. During the succeeding year they are taught anatomy, histology and physiology. These studies are common to both dental and medical

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students, although the teaching in the basic medical subjects for dental students is limited mainly to the regions of special interest, the head and neck. These two years of work lead to the degree of Candidate of Odontology (Cand. Odont.) for which the students must pass written examinations in the five main subjects as well as a written examination in one chosen world language.

After having obtained this degree, the students are enrolled in the dental school, in which they will spend five to six semesters—in other words, two and a half to three years. The teaching in the dental school is concentrated and the curriculum exceedingly heavy; a student's day begins at 8 A.M. and ends at 7 P.M. These long days are compensated for partially by a vacation in the summer and another around Christmas time which amount altogether to about three and a half months.

The first semester in the dental school is a so-called propaedeutic one. During this time the candidates are given didactic teaching in some medical subjects, including general pathology, pharmacology, bacteriology and serology, and internal medicine. Lectures in dental pathology, oral pathology, dental prophylaxis, basic dental orthopedics and dental materials are also included in this semester's curriculum. In addition, the candidates go through a technical laboratory course in operative dentistry and endodontics which consists of lectures, demonstrations and practical work. A similar course in prosthetics and in orthopedic appliances is included in the program of the next semester.

The rest of the curriculum consists of clinical work and lectures in five main dental topics: operative dentistry and endodontics, oral surgery, prosthetics, dental orthopedics and children's dentistry, and dental roentgenology. The teaching is vertical; that is, these subjects are taught continuously throughout the entire curriculum, and the students have patients under their care in the four clinical departments from the first clinical semester to the last one. In addition to the general courses, there are special short courses in prosthetic aspects of cleft palate treatment and in bite analysis. The clinical studies usually take five semesters.

Some figures may serve to illustrate the extent of clinical teaching in the dental subjects. In the prosthetic department the students spend about 1,440 hours in practical work, making about 30 prostheses and about 15 crowns and bridges (they make all prosthetic appliances themselves); lectures in this subject take about 160 hours including demonstrations. In operative dentistry and endodontics the corresponding figures are about 750 hours and 80 hours; during the clinical hours some 120 to 150 amalgam and silicate cement restorations are placed together with 15 to 20 gold inlays, and 25 to 30 root canal treatments of various kinds are given. In oral surgery the clinical work consists of 270 hours, during which time a minimum of 150 extractions are performed, at least 50 of which are under block anesthesia. In addition, the students have to assist in some operations and treat a few fractures of the jaw. Lectures in oral surgery take about 90 hours. In dental orthopedics the students spend, during two years, about 100 hours in clinical work, including treatment and follow-up care for at least two patients; clinical children's dentistry takes about 90 hours, during which time some 30 to 40 restorations of various sorts are placed and at least five root canal treatments are given. The combined lectures in these subjects consist of 90 hours. Lectures in oral roentgenology take about 30 hours; the students are assigned to the roentgenology department for 20 hours during the last two semesters.

Having spent, on an average, five and a half years in their studies, the students must pass written and practical examina-

tions in the main dental subjects as well as written examinations in some medical subjects. These lead to the degree of Licentiate of Odontology (Lic.Odont.). Every graduate with this degree is entitled to practice dentistry in the country without further examinations.

If a dentist wishes to continue his studies, he may undertake a comprehensive investigation in some dental or related field, and publish his work in the form of an academic thesis (printing at least 400 copies). This work is then submitted to the Medical Faculty for public examination. If the student of dental science passes this, he obtains the degree of Doctor of Odontology (Dr.Odont.) which corresponds to the Ph.D. degree. For the principal teaching posts in the dental school this degree is obligatory, thus the scientific competence of the teachers is assured.

The Institute of Dentistry is the center of dental research in Finland. The scientific activities are numerous, and the ever-increasing group of research workers, mostly young men, are attempting to follow the main trends in dental research in the work. Through this attempt, an ever closer contact with the dental profession in countries such as the United States will prove very profitable for Finnish dentistry.

Fabianinkatu 24 B

Progress of dentistry in the Philippines

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Little is recorded about the early beginnings of dentistry in the Philippines. It is safe to assume, however, that prior to the discovery of the Philippines by Magellan in 1521, dentistry was practiced by medicine men (identified during the Spanish regime as *herbolarios*), by tribal chieftains and later by barbers.

During the pre-Spanish era, various Philippine tribes had quaint dental decorative practices. In some places mutilation of anterior teeth was accomplished by filing them to an even level or filing each anterior tooth to a point. In some areas stains on the teeth induced by chewing *buyo* (a mixture of betel nut, buyo leaf and lime) were very conspicuous.

As in other professions, Philippine dentistry evolved through the phases of preceptoral and formal training. The preceptoral phase started with the immigration to the Islands about the year 1854 of a Frenchman, Petri, who established a dental practice in Manila. Petri, whose background is not clearly known, trained one Capitan Chencheng, who became the first Filipino dentist by the simple expedient of paying a *patente*, which is equivalent to the present day

President, Philippine Dental Association.

privilege tax receipt. Anyone who paid a *patente* could practice dentistry. Capitan Chencheng transmitted the trade to his relatives, who in turn taught it to others.

About the year 1898, the San Juan de Dios Hospital engaged men called *cirujanos ministrantes* who worked as helpers to physicians, as do the present male nurses. Seeing the need for at least a little training in the rudiments of medicine, the Faculty of Medicine (*Facultad de Medicine*) of the University of Santo Tomas, a Catholic institution 25 years older than Harvard University, later offered a two year course for *cirujanos ministrantes,* who were allowed to minister to the sick in areas where there were no physicians. In those days, physicians also practiced dentistry.

In 1898, with the cession of the Philippines to the United States by Spain, the Civil Commission issued decrees, one of which recognized the rights of professional men in active practice. From 1899 to 1903 the practice of dentistry was regulated by the office of the Provost Marshal General by virtue of the authority vested in him by the military governor of the Philippines. The practicing dentists then included several American Army and Navy dentists, as well as some Filipino dentists who received their dental education in Europe and some who had "graduated" from apprenticeship and set up their own dental offices.

By authority of the United States, the Philippine Commission in 1903 started to regulate the practice of dentistry through Act. No. 593 which empowered the Commissioner of Health, Major E. C. Carter of the U.S. Medical Department, to appoint members of the first Board of Dental Examiners. A resolution of this Board was passed in accordance with Section 5 of Act No. 593.

Section 5 states:

> Sixty days after the first meeting of the Board of Dental Examiners for the Philippine Islands and subsequent to the passage of this Act, it shall be unlawful for any person to practice dentistry in any of its branches in the Philippine Islands, without a certificate of registration from the Board of Dental Examiners or without having filed with the Secretary-Treasurer of said Board an affidavit for the purpose of securing a registration certificate, setting forth the time and place in which he has practiced dentistry in the Philippine Islands prior to the passage of this law: Provided, That dentists who have passed successfully examinations of Manila, pursuant to authority from the Military Governor of the Philippine Islands, dated August second, eighteen hundred and ninety-nine, shall be furnished with a certificate of registration by the Board of Dental Examiners on payment of the required fee for registration without further examination: Provided also, That nothing in its Acts shall apply to dental surgeons of the United States army on duty in the Philippine Islands, nor in any way apply to or affect any person who was resident in the Philippine Islands and lawfully engaged in the practice of dentistry there prior to the passage of this Act; And provided further, That persons who have studied medicine in the University of Sto. Tomas at Manila for a period of not less than two years and who have received the title of *Cirujanos Ministrantes* and who have studied dentistry for the last four months of their course in such university, may be registered as undergraduates in dentistry upon passing a satisfactory examination before the Board, and, when so registered, shall be authorized to practice dentistry in remote towns where no regularly qualified dentist is available. The names of the towns in which each such undergraduate in dentistry is authorized to practice shall be included in his certificate of registration. The Secretary-Treasurer shall collect a fee of five dollars for each certificate of registration as undergraduate in dentistry issued by the Board.

Three kinds of certificates were issued: (1) certificates of registration to holders of college degrees of Doctor of Dental Surgery or Doctor of Dental Medicine from a "legally incorporated dental educational institution"; (2) temporary certificates of registration to those having the qualifications required by the Board of Examiners, and who were allowed to practice before taking the examinations the next time this would be given; and (3) "undergraduate" certificates of

registration to *cirujanos ministrantes.*

In the registration certificates of dentists who were conferred the degrees, the phrase "legally incorporated dental educational institutions" appeared, while in the "undergraduate" certificate this phrase was omitted in accordance with an opinion rendered by the attorney-general to that effect.

The following were those who took advantage of the privilege as provided for in the law: Wallace G. Skidmore, Robert T. Oliver, Antonino Vergel de Dios, George A. Marshall, Francisco Xavier, Juan L. Villanueva, Ramon Bautista Arevalo, Francisco Bautista de Guia, Leon Cenon Reyes, Adolfo Ferrer Perez, Francisco Astudillo, Crispulo Layoc, Louis Ottofy, Abraham Preston, E. B. Merchant, Henry Wm. Ware, Emmett J. Craig, C. E. Lauderdale, Robert E. L. Newborne, S. D. Boak, George H. Cassady, F. H. Stephens, James W. Strong, Bonifacio Arevalo, Manuel Farinas, Carmen Farines, Frank H. Wolven, Juan Arevalo, Catalina A. Arevalo, Antonio Oliveros, Regino Arevalo, John D. Weldon and George L. Mitchell.

On January 5, 1904, the first examination was given by the Board of Dental Examiners with only three candidates appearing.

On February 5, 1915, a new law, Act No. 2462, provided for rules and regulations for the board examinations and for the practice of the profession. The Director of the Bureau of Health, instead of the Commissioner of Health, was given authority over the Board of Examiners. Following is a pertinent provision:

> Private dental schools or colleges shall be subject to the rules and regulations to be prescribed by the Board with the approval of the Director of Health and the Secretary of the Interior for the purpose of establishing therein a uniform plan of teaching. The course of study shall be patterned after the curriculum of dental schools of the United States with two years actual attendance in classes—the rest infirmary practice. Thirty-two months should elapse from the date of matriculation to graduation. Hereafter the Board of Dental Examiners shall admit to the examination for licensure in the Philippines only those who have a diploma of Doctor of Dental Medicine, D.M.D., or *Doctoris Medicinae Dentalis,* or Doctor of Dental Surgery from an institution duly accredited and legally constituted, and those who would have graduated in the University of Santo Tomas as dental surgeons on (or previous to) March 1916. The University of Santo Tomas graduates shall be free to practice anywhere in the Islands provided they shall have had a practice of three years or more.

Credited with the passage of the foregoing law was the *Sociedad Dental de Filipinas,* the first dental organization, which was organized in 1908 with Gregorio R. Mateo as the leading spirit. The law also provided changes in the qualifications of dental examiners. The requirement, embodied in the previous law, that the alma maters must be "recognized by the National Dental Faculties and the National Association of Dental Examiners of the United States of America," was omitted in the new law, harmonizing with the growing movement to make the government more autonomous.

Incidentally, the late Dr. Mateo was the first Filipino to introduce gold-porcelain fixed bridges and gold foil fillings upon his return from the United States in 1906.

The dental curriculum was increased to three years by Act No. 2602, which became a law on February 4, 1916.

With the leading dental practitioners of the time as founders, the *Colegio Dental del Liceo de Manila* was organized in 1912. Renamed the Philippine Dental College, it was finally recognized in 1916, the same year that its first graduates passed the board examinations. Aiming to supply the need for trained dentists in the country, the college offered a three year curriculum leading to the degree of D.D.S. The entrance requirement was graduation from high school. The courses, patterned after those of Amer-

ican dental schools, included instruction in the basic medical subjects and in the clinical practice of dentistry.

In the school year 1915-1916, the board of regents of the state-supported University of the Philippines authorized the establishment of a course in the College of Medicine and Surgery, leading to the degree of Doctor of Dental Surgery. The first chief of this department, which later developed into a school of dentistry, was Louis Ottofy. Still later, the school became a College of Dentistry and its present dean is Victorino G. Villa.

The growth of dental schools was slow and gradual. Three additional dental schools were established in the next 20 years.

With the exception of the state-supported dental school, the others offered a three year course leading to the degree of D.D.S. Later, the University of the Philippines dental school similarly adopted the three year course and gave an additional one year postgraduate course leading to the degree of Doctor of Dental Medicine. Graduation from high school continued to be the entrance requirement. The schools were under the supervision and regulation of the Department of Public Instruction, which was aided in this function by the Board of Dental Examiners which fell under it administratively.

In 1929 another law was passed, increasing the length of the dental course to four years, leading to the degree of *Doctoris Medicinae Dentalis* or Doctor of Dental Medicine.

Dental schools were allowed to operate during the period of Japanese occupation in World War II, but there was a drastic change in the liberal arts subjects of the dental curriculum.

POSTWAR PROGRESS

The efforts of leading Filipino dentists to raise educational standards were resumed soon after the liberation in 1945. In accordance with the recommendation of the Philippine Dental Association, Congress legislated the adoption of a two year predental course in addition to the regular four year dental course. The said law, known as Republic Act No. 417, went into effect on June 18, 1949.

The Board of Dental Examiners since 1949 has contributed immensely to dental progress, particularly in the maintenance of efficient ethical standards. With the passage of R.A. No. 417 and R.A. No. 546, the following were achieved: (1) the granting of power to the Board of Dental Examiners to inspect dental schools and other dental establishments to see if the laws relating to dentistry are being enforced, to set professional standards for the practice of dentistry and to prescribe collegiate courses for the same; (2) the restoration to the dentists' examination of the performance test, which had been arbitrarily abolished by the Secretary of Health in 1947; (3) the extension of the dental course from four to six years; and (4) the raising of the general rating in the dental examination from 70 per cent to 75 per cent.

A significant landmark in dentistry was the broad power granted by R.A. No. 546 to the Board, which up to then had been merely an advisory committee on technical matters to the Bureau of Private Schools without prerogative for positive action. Under the chairmanship of Gervasio Eraña, the board issued improved rules and regulations and vigilantly enforced them.

The Secretary of Health (a physician) who had allowed the abolition of the practical phase of the Board examinations, had also, when serving as a member of the House of Representatives of the Philippine Commonwealth (several years before World War II), introduced a bill to allow the physicians to practice dentistry legally. The only two dentists who actively objected to this bill were Gervasio Eraña and Victorino G. Villa. Fortunately for the dental profession in

the Philippines, the bill was not passed.

With the abolition of the practical phase of the Board examinations (performance tests), a new dental organization was organized in 1948 or early 1949, called the Federation of Dental Practitioners, which endorsed the abolition of the practical phase of the board examinations. One of the founders of this new organization was the chairman of that particular Board of Dental Examiners which had approved the petition of the Association of Deans of Private Dental Schools asking for the abolition of said practical examinations, the petition having been denied by a previous board of dental examiners. Further, most of these founders were participants in the fusion of the *Sociedad Dental de Filipinas* and the National Dental Association. Together with the then Secretary of Health (not the incumbent), this small organization strongly recommended to the President of the Philippines that he veto the measure sponsored by the Philippine Dental Association and which had been approved unanimously by both houses of Congress. The bill specified among other things the increase of the dental course of study from four years to six years (including a two year predental course); the holding of both the practical phase (performance test) and the theoretical tests, and the provision of stiffer penalties for those found guilty of practicing dentistry illegally. The bill was approved and signed by the President and became Republic Act No. 416, commonly known as the Dental Law. Fortunately for the dental profession in the Philippines, at the start of the incumbency of the writer as president of the Philippine Dental Association, in the early part of 1953 the application of this new organization for affiliation to the P.D.A., the national organization of dentists in the Philippines, was approved.

The arrival of dentists of the U. S. Armed Forces with the liberation forces exerted a tremendous influence on Philippine dentistry. Cut off from the rest of the world during the dark four years of Japanese occupation, the Filipino dentists were eager to learn of the latest developments in clinical dentistry. The American dentists found staunch friends among their local colleagues who learned from them the newest advances in dental science. In addition to such learning acquired by direct contact, there were numerous dentists who supplemented their knowledge by observation and study in the United States and other countries.

GROWTH OF DENTAL SCHOOLS

The number of students seeking admission to the dental schools increased enormously. The dental student population throughout the country during the seven year period 1948-1954 follows:

1948-1949	2,947
1949-1950	3,065
1950-1951	5,250
1951-1952	4,736
1952-1953	2,760
1953-1954	2,020

The dental schools began the postwar period amidst heavy odds since the war had left their physical plants and libraries in ruins. Struggling with pitifully meager facilities, the schools were rehabilitated rapidly and acquired equipments and supplies. At present there are ten dental schools in the Philippines, all of which are privately owned and managed except the college of dentistry of the State University of the Philippines. Of the nine proprietary schools, four are parts of universities, while the rest are independent institutions.

There is a new requirement imposed by the Bureau of Private Schools, making the satisfactory completion of a one year hospital internship a necessary prerequisite for graduation.

These improvements are hailed in a resolution jointly adopted by the Board of Dental Examiners, the Philippine Den-

tal Association and the deans of dental schools on May 23, 1953, wherein the signers stated that "having raised the academic and professional standards of the profession . . . dental graduates and practitioners in the Philippines can now be considered at par with those in the United States." Accordingly they petitioned the American Dental Association to request the proper officials thereof

> . . . to duly recognize and accredit the dental courses as now given in the Philippines with a view to enabling dental graduates and practitioners in the Philippines to take up graduate or specialization courses in any recognized and legally established dental college in the United States without requiring them to go again through the junior and senior classes of the regular dentistry course offered in said colleges.

The dental schools in the Philippines, however, urgently need better trained faculties. An exchange program whereby Filipino faculty members might attend courses especially designed for teaching dentistry would help solve the situation.

DENTAL LEGISLATION

Great strides were made in dental education through the initiative of both the Board of Dental Examiners and the Philippine Dental Association. These entities also increased public awareness of the profession by sponsoring various legislative measures. Among the important bills recently enacted were:

R.A. No. 465, standardizing examination and registration fees, and requiring professionals, including dentists, to register annually.

R.A. No. 480, providing that initial appointments in the Philippine Army Dental Corps shall be in the grade of first lieutenant.

R.A. No. 481, providing for autonomy and more efficient service in the Army Dental Corps.

R.A. No. 546, providing for a separate Office of the Board of Examiners and making the board examiners presidential appointees. (Other significant features of this act were discussed briefly earlier.)

R.A. No. 914, fixing the minimum compensation of dentists and pharmacists employed by the government in positions requiring dental and pharmaceutical knowledge respectively.

R.A. No. 951, amending Republic Act No. 124, requiring private schools with at least 300 students to provide dental service.

R.A. No. 1054, rendering and consolidating Act. No. 3961 providing for free emergency dental service for employees and laborers of commercial, industrial and agricultural establishments and providing penalties for noncompliance.

R.A. No. 1056, liberalizing the use of organs or portions of the human body for medical and scientific purposes.

R.A. No. 1082, creating the position of public health dentist for every congressional district.

R.A. No. 1128, completely separating the dental from the medical service of the armed forces.

At present there are two dentists who are members of the Philippine Congress; they have been strongly militant in guarding and promoting the interests and ideals of the dental profession in the country. They are Representative Ricardo Y. Ladrido, a past president of the Philippine Dental Association, and Representative Salvador Encinas. Dr. Ladrido is serving his second term in Congress, having been reelected in the last national election.

On the initiative of the Philippine Dental Association, the President of the Philippines issued a proclamation in 1951 for the celebration of a National Dental Health Week on February 3 to 9 each year. This week is celebrated all over the country by the local dental so-

cieties, government officials, educational institutions and civic organizations.

Public appreciation of dentistry is increasing and the government of the Philippines has come to understand the need for dentists in carrying out broad health programs. There are four government agencies now extending dental service to the public: namely, the Bureau of Hospitals, the Bureau of Health, the Bureau of Public Schools, and the chartered cities. Dentists employed by these agencies are dealing with the people directly and are contributing in no small measure to the education of the laity in dental care. The increasing use of dentists in public health services is due largely to the respective dentists themselves in cooperation with the officials of the Philippine Dental Association. A recent legislative measure provides for the employment of a dentist in each of the 102 congressional districts which comprise the Philippines. While the measure increases the role of dentists in public health, the service is still inadequate since each congressional district embraces at least 15,000 inhabitants, and oftentimes more.

At present, the Philippines has, roughly, a population of 23,000,000 and there are approximately 6,000 to 7,000 dentists. Some means are being worked out to distribute this number evenly as there is a strong tendency for dentists to flock to the cities and other large centers of population leaving the remote areas without dental services.

Largely because of the initiative of the P.D.A., there is an ambitious program to educate the public in the dental field and to provide measures to check the gross prevalence of dental ailments, but our government does not seem to have sufficient appropriations to shoulder the expenses involved. It is our earnest hope that some philanthropists, possibly in the United States, can initiate foundations in the Philippines solely for dental purposes.

FOUNDING OF P.D.A.

This brief account would be incomplete without mentioning organized dentistry in the Philippines, which began in 1908 with the formation of the *Sociedad Dental de Filipinas*. It flourished as the only dental organization in the country until 1924 when the National Dental Association was founded. Both groups continued to exist as separate entities until 1946 when a fusion was effected. A "gentleman's agreement" was reached that for the good of the dental profession in the Philippines, no other national dental organization would be organized in the future, to preserve the dignity of the profession by avoiding rivalry, disunity and confusion before the eyes of the public. The organization resulting from this fusion is the Philippine Dental Association, which is patterned very much after the American Dental Association.

The Philippine Dental Association is the national organization of dentists in the Philippines and is composed of more than 60 constituent dental societies in the different provinces and cities in the whole Philippines. Moreover, it is the mother organization of other small local dental groups which are affiliated to it. The P.D.A. is the member organization representing the Philippines in the *Fédération Dentaire Internationale*.

In the short history of the P.D.A., the following signal accomplishments have been credited to it: the enactment of Republic Act No. 417 which increased the length of the dental course from four to six years; in cooperation with the Board of Dental Examiners, the enactment of R.A. No. 546 which gave the Board of Dental Examiners wide discretion in the supervision of dental schools and in regulating the practice of dentistry; the monthly publication of a dental journal; increase of interest on the part of the dentists in professional and organizational activities; enactment of various laws affecting dentistry (cited earlier);

participation in foreign dental meetings; holding of scientific meetings where the latest advances in dental science are demonstrated and discussed; establishment of closer harmony with the dental services of the Armed Forces of the United States as well as with dental organizations in other parts of the world, and raising the dignity and prestige of the profession at home and abroad.

These accomplishments would not have been possible were it not for the generous help and assistance extended the P.D.A. by the dental services of the Armed Forces of the United States, and by the various members and officials of the American Dental Association as well as the staff of its Central Office. These friends have been the guiding influence through these years in the affairs of the Philippine Dental Association.

While great strides have been achieved by Philippine dentistry in recent years, there is still much to be accomplished. It is the earnest hope of the Philippine Dental Association that, with the American Dental Association and the F.D.I. providing the inspiration as well as the assistance, Filipino dentists will continue to carry on in the best ethical tradition of this noble and dignified profession.

1201 Arlegui

Dental situation in Japan

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Today's dental situation in Japan may be of interest to dentists in other parts of the world. The high incidence of dental disease and other problems that dentists face in Japan show the need for guidance on how to serve best the oral health needs of the Japanese people.

Approximately 92 per cent of the total population of Japan have dental caries, according to an investigation made in April 1952. It is estimated that 3.8 teeth per patient need treatment. Statistics show that 54 per cent of the elementary school pupils, 24 per cent of the junior high school students and 52 per cent of the population between 25 and 30 years old have received treatment for caries. Fifty-six per cent of the adult men and 47 per cent of the adult women have periodontal disease.

In spite of the incidence of dental disease in Japan, the interest of the public in oral health is not very great. One example of this lack of interest is shown in the consumption of dentifrices. It is estimated that 58 per cent of the total population do not use any kind of commercially prepared dentifrice. It is assumed that the rest of the Japanese people use salt, as they did many years ago.

Answers to questionnaires distributed by the Osaka Dental Association, however, revealed some interest in dental hygiene. The following were the questions which brought forth response:

1. How can one take care of the teeth, particularly the anterior teeth, for good appearance?

Greetings from the Japan Dental Association to the American Dental Association, ninety-fifth annual session, Miami, Fla., November 8-11, 1954.

2. Why does one have a toothache?
3. How can periodontal disease be prevented?
4. What is the cause of halitosis? How can it be prevented?

The number of dentists in Japan has been estimated at 28,941 as of December 31, 1953. There is one dentist for every 2,980 people. On March 30, 1954, it was estimated that there were 452 dental hygienists. The number of dental technicians on December 31, 1952 was 5,000.

Every year, one week in June is set aside as "oral health week" throughout Japan. Lectures on mouth hygiene are given in schools, factories and offices. Posters are displayed along the streets, and slogans are collected from the public. Free consulting places sponsored by the dental associations are opened, and contests are held in all prefectures for the healthiest teeth among Japanese mothers and children.

The Department of Welfare and the prefectural health bureaus bear the expense for the examination of teeth and consultation for all pregnant women and for children. This service is provided for by the child welfare law.

The Japanese dentists are working hard for the welfare of the Japanese people. Recently, however, they have been facing difficult problems, such as those caused by the health insurance system, which dates back 25 years.

The following kinds of insurance are now in effect:

1. Health insurance, both that which is managed by the government and that managed by labor unions.
2. Seamen's insurance.
3. Mutual relief.
4. Labor disaster insurance.
5. National health insurance.
6. Payment for the unemployed.
7. Payment for those killed and wounded in the war.
8. Payment for unrepatriated persons.

The number of persons insured is 21,000,000, and the number of family members is 36,000,000. Sixty-five per cent of the total population have one or more of the previously mentioned kinds of insurance. The recent economic depression may be the cause of an increase in the number of persons insured.

The insured pays 6 per cent of his salary or wages, and the employer pays the same amount. The government, therefore, only bears part of the expense of the insurance. When the insured becomes ill, the total expenses incurred are paid by this insurance. When the insured cannot work during a period of convalescence, 60 per cent of his salary is paid. When a family dependent consults a doctor, one half of the expense is paid by insurance and the other half by the insured. Childbirth and funeral expenses are also paid, according to the regulation. Some of the money paid into the insurance is also used for picnics and other entertainment for the insured and the family members. The amount that actually is paid for treatment, therefore, is somewhat decreased.

At the end of every month, the dentist must make out a detailed report on each patient including the kind of treatment given and the amount to be charged. The bill then is sent to the office handling the fund, where it is checked. The making of this complicated statement requires several days.

Payment is limited to certain kinds of treatment. The fees are regulated, with no allowances made for the experience or skillfulness of the dentist. The regulated fee is approximately one tenth of the fee charged by the average American dentist. The Japanese dentist works 11 hours per day to offset the low rate. The regulation of fees slows down research work somewhat and in that way hinders the advancement of dental science.

The dentist of Japan, however, is interested to learn about new dental equipment and technics. In spite of handicaps, research work is being carried on.

39-3 Joderi, 3 Chome, Minatoku

Dental progress in India

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Prior to 1945 the growth of dentistry in India was sporadic. There was neither a dental act nor a dental association on a national basis. Any person who felt like practicing dentistry could do so. The few dental organizations were local in scope. Bombay, Ahmedabad, Poona, Lahore, Nagpur, Calcutta and Madras had small organizations striving to advance dentistry in the country.

The year 1946 was an important one for the dental profession in India. In that year the first All India Dental Conference was held and the first dental association on an "all-India" basis was organized. The 1946 conference in New Delhi adopted a constitution for the All India Dental Association. With the formation of this Association, existing smaller organizations were amalgamated. Each adopted a uniform constitution and gave allegiance to the parent organization.

The government[1] and the nation became convinced that the dental profession was making a determined effort to elevate dentistry. A dental bill was prepared and presented to the government by senior members of the All India Dental Association. The ensuing Dental Act represented the interests of both qualified and unqualified dentists in India.

To clarify the term "unqualified," it should be understood that many dentists in our country have had no formal training because of the lack of dental schools and the widespread practice of apprenticeship. For these and economic reasons, students could not go abroad to obtain the proper training. Understanding the situation, the All India Dental Association provided safeguards in its constitution for both qualified and unqualified practitioners.

Directing its attention to dental education and dental amenities for the people,[2] the Association was successful in inducing the government to award scholarships to deserving candidates so that they might go to the United States or the United Kingdom for higher dental training and return to their homeland to serve as teachers. In 1947, 13 such candidates were sent abroad for dental training, and in 1948, nine. Internships were arranged at the Eastman Dental Clinic at Rochester, N. Y., the Forsyth Dental Infirmary for Children at Boston and the Murry and Leonie Guggenheim Dental Clinic in New York City. Each year six candidates selected by the Association go to these institutions as interns to acquire higher knowledge and develop a broader professional outlook.

The Association impressed on the different governments the importance of establishing dental educational institutions in India. Today there are six dental institutions admitting students for the Bache-

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1. Bery, N. N. Dental amenities in India. Seventh All India Dental Conference, souvenir number, 1952.

2. Bery, N. N. Annual report, All India Dental Association, Third All India Dental Conference, souvenir number, 1948.

Table 1 • Dentists registered by the Dental Council of India*

	Qualified as per Part A of Register	Nonqualified as per Part B of Register	Nonqualified as per B-Temporary Register	Total number of dentists	Ratio dentist:population
All India	546	2,444	361	3,351	1:95,493 All India
Whole of the Bombay State	186	659	110	*955	1:37,650 Bombay State
Bombay City proper	90	155	47	292	1:7,976 Bombay City
	120	210	50	380	1:5,798 Suburbs of Bombay
Suburbs of Bombay	30 Greater Bombay	55 Greater Bombay	3 Greater Bombay	88 Greater Bombay	1:7,471 Greater Bombay
Bombay State minus Bombay City and suburbs	66	449	60	575	1:57,484 Bombay State minus Bombay City and suburbs

*Registered dentists practicing in 199 cities, towns and villages of 30 districts of Bombay State.

lor of Dental Surgery (B.D.S.) degree. Each has a four year course with two years of predental training. These colleges graduate not more than 100 students annually. Each college also treats more than 20,000 patients in a year. The colleges are affiliated with the universities in the respective areas, and are guided and controlled by the Dental Council of India.

Politically, India is divided into 29 states, of which 10 are Part "A" states (Assam, Bihar, Bombay, Madhya Pradesh, Madras, Orissa, Punjab, Uttar Pradesh, West Bengal and Andhra), eight are Part "B" states (Hyderabad, Jammu and Kashmir, Madhya Bharat, Mysore, Patiala and East Punjab States Union, Rajasthan, Saurashtra, Travancore and Cochin), 10 are Part "C" states (Vindhya Pradesh, Ajmer, Bhopal, Bilaspur, Coorg, Delhi, Himachal Pradesh, Kutch, Manipur and Tripura), and one a Part "D" state (Andaman and Nicobar Islands). The states are so divided on the basis of their having been provinces, native states, commissioner's provinces or islands during the British regime.

The Dental Act came into force in 1948. No other public bill representing a small section of the scientific and professional personnel of this vast country has been enacted so quickly.

The Act recognized that if all the dentists who did not have recognized diplomas were debarred from practice, it would not only mean a sharp depletion of dentists but would deprive a large group of their livelihood. Hence a Part B of the register was proposed, under which dentists were allowed to enroll who did not possess the required qualifications and who had been practicing for five years prior to the Act. Under Part A are enrolled dentists who possess the dental qualifications.

The Act provides for the formation of the Dental Council of India at Delhi and dental councils in various states. The former was constituted in 1949. State dental councils have been formed in Bombay, Madras, Uttar Pradesh, West Bengal and Kutch.

The Dental Council of India regulates dental education and the profession. Each few years the Dental Council sends its inspectors to see whether adequate standards of education are maintained in the colleges and institutions. It also recommends additions or amendments to

the Dental Act. It lists minimum requirements for teaching staffs, and from time to time acknowledges the qualifications. This work is done by the Dental Council of India at New Delhi. The dental council in each state regulates the profession in the state, and curbs unauthorized or unethical practices. No person not registered with the state dental council is allowed to practice dentistry in that state.

It is usually the responsibility of the private practitioner to relieve patients of dental pain and disease, but as Table 1 indicates,[3] there is a great need for dentists in India and hence such relief is also taken care of in the hospitals and colleges.

All general hospitals in the states and cities usually have attached dental clinics. The type of treatment given at clinics is essentially ameliorative; only extractions and scaling and a little prosthetic work are done there. Table 2 shows the number of such centers in each state, with population figures for the states. The table underscores the dearth of dentists in India.

Readers unfamiliar with India may think that dentists practicing in our country must be millionaires. It is not so because the demand for dental treatment is not great. The people have not been

3. Desai, V. M. Speech by the chairman of the reception committee—9th All India Den. Conf. J. All India D. A. 9th Conf. program, 1954, p. 13-16.

Table 2 • Population figures and dental centers giving dental relief

States	Population millions	Number of dental centers
Part "A" states		
Assam	7.47	4
Bihar	36.34	5
Bombay	20.84	31 and 485 emergency treatment
Madhya Pradesh	16.81	5
Madras	49.34	14
Orissa	8.72	3
Punjab	12.61	12
Uttar Pradesh	55.49	6
West Bengal	21.85	21
Andhra		
Part "B" states		
Hyderabad	16.33	4
Jammu and Kashmir	4.02	No information
Madhya Bharat	7.14	3
Mysore	7.32	3
Patiala and East Punjab States Union	3.42	6
Rajasthan	13.1	8
Saurashtra	3.55	No information
Travancore and Cochin	7.5	4
Part "C" states		
Vindhya Pradesh	3.5	No information
Ajmer	0.58	1
Bhopal	0.78	1
Bilaspur	0.11	No information
Coorg	0.16	2
Delhi	0.91	7
Himachal Pradesh	0.93	3 or 4
Kutch	0.5	1
Manipur	0.51	6
Tripura	0.51	1
Part "D" state		
Andaman and Nicobar Islands		

Population figures and dental centers in each Indian state

taught to recognize dental diseases, and go to the dentist only when in pain. Such apathy is due to the people's great poverty and lack of education. For many years the people found all ways barred to remedy their conditions, which led to general apathy. Today conditions have changed. People and the government are striving hard to remedy faulty conditions, and we see a dental awakening both of the people and of the authorities concerned.

The accompanying map shows the dental centers in the various states, and state population figures. As can be seen, India requires a large number of dental practitioners if dental preventive measures are to be instituted.

Research programs are being established. The All India Dental Association negotiated a research grant from commercial concerns for two colleges in Bombay, and some good work has been done there. This is only a small part of what is desired and planned.

At Delhi the Government of India, under the Colombo Plan, is planning to build a dental institution of very high quality, where research will be performed. The colleges in India are improving

steadily, and efforts are being made to increase the number of annual graduates.

The All India Dental Association is constantly waiting on the government to urge it to share the responsibility for maintaining the health of the people.

India today has a very active dental profession, with a dental association, two dental journals, six dental colleges and a Dental Act—no mean achievement for a short period of eight years.

Relation of betel leaf chewing to periodontal disease

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Betel leaf chewing is an acquired habit of the Indian populace. The habit is commonly termed in India as "pan chewing." The word pan in Hindi means a leaf, and chewing carries its obvious meaning.

It is the betel leaf in which lime, the areca nut (Areca catechu) or betel nut, and tobacco in different quantities are wrapped in packets and chewed. Hoover[1] says that a betel leaf chew contains "alkaloids, calcium hydroxide and essential oils from the betel leaves." The habitual chewer may keep a "chew" in his mouth from 15 to 30 minutes and may in 16 hours consume from 1 to 200 packets.

Some dentists believe that betel leaf chewing is a healthy habit, whereas others like Freund[2] are bitter in their comments against it.

Ellis, as quoted by Prinz,[3] observed in Bangkok that the teeth become dark brown from chewing betel leaves because of the deposit of lime which collects on the teeth. The deposits become thick and possibly encompass the whole tooth. The gingiva then separates from the necks of the teeth and the teeth become loose.

Balendra[1] has observed that the habit of betel chewing causes a breakdown of periodontal tissues, but he does not present any acceptable statistical data to support his contentions.

Marshall-Day[4] said:

> One has the impression, based on considerable clinical experience in India, that the irritation from the habit of chewing of betel nut in India, Ceylon and other Asiatic countries may be an important factor in periodontal breakdown but once again reliable data are lacking.

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‡Research Fellows, Nair Hospital and Sir C. E. M. Dental College.

1. Balendra, W. Effect of betel chewing on the dental and oral tissues and its possible relationship to buccal carcinoma. Indian D. Rev. 18:227 Sept. 1949.

2. Freund, Herbert. Betel-leaf chewing and periodontal disease. Unpublished paper read at the All India Dental Conference, Lucknow, India, 1952.

3. Prinz, Hermann. Disease of the soft structures of the teeth and their treatment, ed. 2. Philadelphia, Lea & Febiger, 1937.

4. Marshall-Day, C. D. Epidemiology of periodontal disease. J. Periodont. 22:13 Jan. 1951.

This study was motivated by a desire to determine whether the habit of betel chewing is a contributing factor to the rise in incidence of periodontal disease in India.

A group of 1,023 men were selected whose ages ranged from 16 to 30 years. It was felt that age does not have such a predominant part in the increase of periodontal disease at this age level. The men had lived in the state of Bombay, particularly in the Ratnagiri district, for 5 to 30 years. The economic status of this group was not as low as one might expect, for their incomes ranged from 80 to 100 rupees per month. Their jobs necessitated their being physically fit, and the best dental and medical care was available to them. Their diets included meat or fish at least two times a week.

This group was divided into those who chewed betel leaves and those who did not. Nonchewers were those who did not consume any betel leaves and chewers were those who consumed from 5 to 20 betel leaf packets per day.

The subjects were examined with a mouth mirror and explorer under proper lighting conditions. Any persons with missing teeth other than third molars were excluded. No roentgenographic examination was made.

In this report the term periodontal disease will include all departures of the gingival tissues from normal, except those deviations caused by specific infections. The criteria for the evaluations of the gingival conditions are derived with slight modifications from King[5] and Marshall-Day and Shourie.[6]

The mouth was divided in six sections: upper and lower anterior sections, and upper and lower and right and left posterior sections. The anterior section included the region up to the cuspid tooth on either side. The section beyond the cuspid was considered to be the posterior section.

The disease was classified as local or general depending on the involvement of the papillary and marginal regions. If the disease involved more than two margins of papillae, it was considered to be generalized in character; if it involved two margins or two papillae or less in each of these regions, it was considered to be localized. The disease was further divided into mild, moderate and severe, using the following criteria:

1. No disease—gingiva pale pink in color; gingival margins tapered on to the surface and fill interdental space; gingiva stippled in appearance; pockets not more than 1 mm. deep; no exudates emanating on finger pressure; no bleeding from gingiva on examination with an explorer.
2. Mild disease—swelling and glazing of the gingival margin; papilla blunted or rounded.
3. Moderate disease—swelling and pocket formation on the buccal or lingual aspects; spongy tissue; spontaneous bleeding on pressure.
4. Severe disease—excessive swelling; extremely deep pockets on buccal and lingual aspects; spongy tissue; spontaneous, profuse bleeding on pressure or on examination with an explorer.

The disappearance of the mat surface with reduction or absence of stippling, swelling of the gingival margin, color change, detachment of the gingiva from the tooth surface with deepening of the gingival crevice and suppuration were also bases for the classification of the disease.

Betel leaf chewing usually results in the general involvement of the gingiva. Localized periodontal disease is due mainly to other causes. In order to test the relation between betel chewing and the incidence of periodontal disease, and the age of the chewers and the incidence of the disease, only those subjects with

5. King, J. D. Gingival disease in Dundee. D. Record 65:9 Jan. 1945.

6. Marshall-Day, C. D., and Shourie, K. L. Hypertrophic gingivitis in Indian children and adolescents. Indian J. M. Research 35:261 Oct. 1947.

Table 1 • Incidence of periodontal disease in betel leaf chewers and nonchewers*

Group	Generally affected	Locally affected or not affected	Total
Chewers	534	50	584
Nonchewers	370	69	439
Total	904	119	1,023

*Statistics for this study were compiled by Nariman Dhalla, Bombay, India.

Table 2 • Incidence of periodontal disease in different age groups of betel leaf chewers

Age in years	Generally affected	Locally affected or not affected	Total
16 to 20	3	2	5
21 to 25	224	29	253
26 to 30	307	19	326
Total	534	50	584

general involvement of the gingiva were considered. The rest were either locally affected or had no periodontal disease, and were termed "not generally affected."

It was found that there was a relation between betel leaf chewing and periodontal disease (Table 1). A chi square test run on the results showed that betel leaf chewing is a significant factor in the incidence of periodontal disease. The value obtained in the chi square test is only statistically significant at the 5 per cent level. The value obtained here was 12.56, which is much higher than the maximum required to establish the null hypothesis.

Examination of the data in Table 2 indicates that there may be some relation between age and periodontal disease in the betel leaf chewer, but it is not clearly significant. The relation found may be due to the length of time the habit is maintained.

There was no relation found between age and the general involvement of the gingiva in subjects 16 to 30 years who were nonchewers (Table 3).

In order to compare the gingiva of the betel leaf chewers with those of the nonchewers, only those subjects who had a general involvement of the gingiva in each of the segments of the mouth were considered. The disease may be localized in each of the regions of the mouth, but it surely cannot affect only a single papilla or a margin in that region.

The statistical test applied to these values was the test of standard error of difference between percentages. The hypothesis set up for this test was that betel leaf chewers and nonchewers were drawn from the same universe and that the difference in percentages of general involvement of the gingiva was due to sampling fluctuations.

The test is expressed in the value of "t" (the difference between hypothetical and observed values expressed in units

Table 3 • Incidence of periodontal disease among different age groups of nonchewers

Age in years	Generally affected	Locally affected or not affected	Total
16 to 20	6	1	7
21 to 25	241	42	283
26 to 30	123	26	149
Total	370	69	439

Table 4 • Effect of betel leaf chewing on gingiva of upper anterior region

Age in years	Group	Not affected	Locally affected	Generally affected	Total
16 to 20	Chewers	4	1	0	5
	Non-chewers	1	2	4	7
21 to 25	Chewers	106	30	117	253
	Non-chewers	93	39	151	283
26 to 30	Chewers	107	28	191	326
	Non-chewers	61	27	61	149
Total	Chewers	217	59	308	584
	Non-chewers	155	68	216	439
Per cent	Chewers	37.15	10.10	52.75	100.0
	Non-chewers	35.31	15.48	49.21	100.0

Table 5 • Effect of betel leaf chewing on gingiva of lower anterior region

Age in years	Group	Not affected	Locally affected	Generally affected	Total
16 to 20	Chewers	2	1	2	5
	Non-chewers	1	2	4	7
21 to 25	Chewers	50	33	170	253
	Non-chewers	67	38	178	283
26 to 30	Chewers	53	32	241	326
	Non-chewers	40	17	92	149
Total	Chewers	105	66	413	584
	Non-chewers	108	57	274	439
Per cent	Chewers	18.00	11.30	70.70	100.0
	Non-chewers	24.60	12.99	62.41	100.0

Table 6 • Effect of betel leaf chewing on gingiva of upper left posterior segment

Age in years	Group	Not affected	Locally affected	Generally affected	Total
16 to 20	Chewers	3	0	2	5
	Non-chewers	0	1	6	7
21 to 25	Chewers	60	29	164	253
	Non-chewers	58	36	189	283
26 to 30	Chewers	45	30	251	326
	Non-chewers	35	17	99	149
Total	Chewers	108	59	417	584
	Non-chewers	91	54	294	439
Per cent	Chewers	18.49	10.10	71.41	100.0
	Non-chewers	20.73	12.30	66.97	100.0

of standard error). A "t" of 2.576 corresponds to a probability of 1:100. One hundredth part of the area under the normal curve is 2.576 standard deviations or more from the mean. A value for "t" of 2.576 or more indicates a significant difference, whereas a value of less than 2.576 indicates that the results are not inconsistent with the hypothesis in question.

Table 4 indicates that betel leaf chewing was not detrimental to the gingival tissues of the upper anterior section of the mouth. The value of "t" in this instance was 1.1.

The lower anterior region of the mouths of betel leaf chewers was detrimentally affected (Table 5). The value of "t" in this instance was 2.8.

The effect of betel leaf chewing on the gingiva of the upper left posterior region of the mouth was not detrimental (Table 6). Any increase in incidence of periodontal disease in this section of the mouths of betel leaf chewers was not statistically significant, as 1.51 was the value obtained in the "t" test.

The data in Table 7 indicate that the gingival tissues of the lower left posterior region of the mouths of the betel leaf chewers were adversely affected by this habit. Since the value for "t" was 3.69, the increase in incidence of periodontal disease in this region was statistically significant.

The gingival tissues of the upper right posterior segment are adversely affected by the betel chewing habit (Table 8). The value of "t" was 2.68.

Examination of the data in Table 9 reveals that the gingival tissues of the lower right posterior region of the mouth are also adversely affected by betel chewing. The value obtained for "t" in this instance was 2.98.

DISCUSSION

It was noticed in our study and in Ellis'[3] that the teeth of the betel leaf chewers are covered with tartar, a deposit which has been definitely associated with periodontal disease. Some of the important causes of tartar formation are stagnation of saliva and the calcium salts found in the saliva.[3] Betel leaf chewers, of course, ingest considerable calcium hydroxide. The chewing action causes a profuse flow of saliva which the chewer does not swallow but keeps in his mouth for consider-

Table 7 • Effect of betel leaf chewing on gingiva of lower left posterior region

Age in years	Group	Not affected	Locally affected	Generally affected	Total
16 to 20	Chewers	5	0	0	5
	Non-chewers	5	0	2	7
21 to 25	Chewers	112	15	126	253
	Non-chewers	126	18	139	283
26 to 30	Chewers	76	22	228	326
	Non-chewers	67	8	74	149
Total	Chewers	193	37	354	584
	Non-chewers	198	26	215	439
Per cent	Chewers	33.07	6.33	60.60	100.0
	Non-chewers	45.10	5.92	48.98	100.0

Table 8 • Effect of betel leaf chewing on gingiva of upper right posterior segment

Age in years	Group	Not affected	Locally affected	Generally affected	Total
16 to 20	Chewers	4	1	0	5
	Non-chewers	0	1	6	7
21 to 25	Chewers	69	28	156	253
	Non-chewers	92	25	166	283
26 to 30	Chewers	65	31	230	326
	Non-chewers	47	20	82	149
Total	Chewers	138	60	386	584
	Non-chewers	139	46	254	439
Per cent	Chewers	23.63	10.28	66.09	100.0
	Non-chewers	31.65	10.49	57.86	100.0

Table 9 • Effect of betel leaf chewing on lower right posterior segment

Age in years	Group	Not affected	Locally affected	Generally affected	Total
16 to 20	Chewers	3	1	1	5
	Non-chewers	4	1	2	7
21 to 25	Chewers	132	22	99	253
	Non-chewers	136	34	113	283
26 to 30	Chewers	89	51	186	326
	Non-chewers	72	18	59	149
Total	Chewers	224	74	286	584
	Non-chewers	212	53	174	439
Per cent	Chewers	38.35	12.69	48.96	100.0
	Non-chewers	48.29	12.07	39.64	100.0

able time. The saliva and the quid remain stagnant in the mouth for more than an hour. The chewing usually is done in the posterior segments of the mouth.

It does not seem surprising that the upper anterior region of the mouths of betel leaf chewers is not affected, because in that section there is no stagnation of saliva. The upper anterior segment scarcely contacts the quid.

It has been shown that chewing adversely affects the periodontal tissues of the lower anterior segment. The findings of others who state that stagnation of saliva and large quantities of calcium salts, alkaloids and essential oils play a role in periodontal disease are corroborated.

Manly[7] states that people show a preference for chewing on the right side of the mouth. It was noticed that the

7. Manly, R. S. Personal communication.

betel leaf chewer usually chews on his right side. Examination of the data reveals that the lower right side of the mouths of betel leaf chewers is greatly affected by periodontal disease. The upper right side, of course, is not so greatly affected because the periodontal tissues do not come in close contact with the ingredients being chewed. There is little chance for stagnation of saliva in this region.

The habitual betel leaf chewer chews the betel leaf on the right side of the mouth and then transfers the chew to the left mucobuccal fold. Thus the quid comes in contact with the lower left posterior region. Our findings indicated that this section of the mouth was adversely affected by betel chewing. On the other hand, the upper left side of the mouth of the betel leaf chewer does not show any increase in incidence of periodontal disease in comparison with the mouth of the nonchewer because this region does not come in contact with the quid.

The lower right posterior segment where the chewing is done is less affected than the lower left posterior segment. The question remains whether the lower incidence of periodontal disease on the chewing side is caused by the chewing motion.

SUMMARY AND CONCLUSIONS

An attempt has been made to determine whether betel leaf chewing adversely affects the gingiva. The gingival tissues of a group of 1,023 individuals were examined for signs of periodontal disease. It was found that there was a higher incidence of periodontal disease in betel leaf chewers than in nonchewers.

It may be concluded that betel leaf chewing is definitely detrimental to the health of the gingival tissues, and it is a contributory cause to the high incidence of periodontal disease that other workers[8] have shown.

8. Mehta, F. S., and others. Incidence of periodontal disease amongst Indian adults. J. All India D. A. 26:4 May 1953.

Stain in mottled enamel

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There appears to be considerable difference of opinion concerning the stain in mottled enamel. Some workers believe the stain to be of inorganic origin, whereas others think that it is of organic origin. In an article on mottled enamel, McKay[1] wrote that a Mr. Robert Spurr Weston had analyzed the stained part of a mottled tooth and had declared the stain to be manganese. Silva, Chapedi and Pedace[2] stated that the stain probably was due to the deposit of iron and manganese salts. Applebaum[3] expressed the opinion that the stain was due to the

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1. McKay, F. S. Mottled enamel. The chemical determination of the discoloration known as the brown stain. D. Cosmos 69:736 July 1927.

2. Silva, L. L.; Chapedi, E., and Pedace, E. A. Fluorosis y tuberculosis. Semana Méd. 1:1413 June 13, 1940.

3. Applebaum, E. Personal communication, 1939.

porosity of the enamel, which absorbs food stains in the saliva. Dean,[4] Roholm[5] and Nommik[6] have stated that they do not know what the stain is. The following investigation was carried out to ascertain if the stain in mottled enamel is caused by manganese or iron compounds or both.

MATERIALS AND METHODS

The mottled enamel used in this investigation was obtained from moderately mottled enamel (Fig. 1, above) and from severely mottled anterior teeth (Fig. 1, below). Normal enamel was used as a control.

The normal and mottled enamel was removed with new, clean burs. Any steel particles which might have broken from the burs were removed by means of a magnet. The powdered enamel was then arced in cupped copper electrodes at 5 amperes for 20 seconds, when the plate was moved and the arcing for a further 20 seconds was recorded. A large Littrow-type spectrograph was used. The copper electrodes contained traces of iron, but no manganese. Normal and mottled enamel was arced on the same spectrographic plate under identical conditions.

RESULTS

Examination of the spectrograms reveals that there was no manganese and only traces of iron in the normal enamel (Fig. 2, a and b). Examination of the spectrograms of the moderately mottled enamel discloses that manganese was present, and that the amount of iron present was about the same as it was in the normal enamel (Fig. 2, c and d). The amount of manganese shown in the spectrograms is much higher in the severely mottled enamel than in the moderately mottled enamel. The amount of iron, however, is only slightly increased in the severely mottled enamel (Fig. 2, e and f).

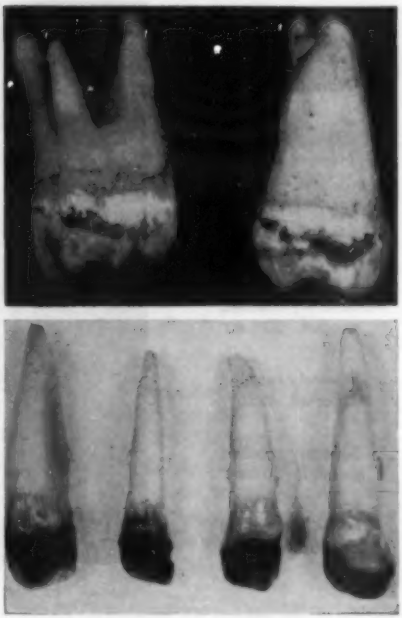

Fig. 1 • Above: Moderately mottled enamel. Below: Severely mottled enamel with black stains, pits and hypoplasia

DISCUSSION

The results of this investigation confirm Weston's findings that the stain in mottled enamel is caused by manganese compounds. Since the manganese content is very much higher in the severely mottled enamel than in the moderately mottled enamel, it appears that the degree of staining varies with the amount of manganese compounds present. Since the amount of iron present is practically the same in the normal enamel and the mod-

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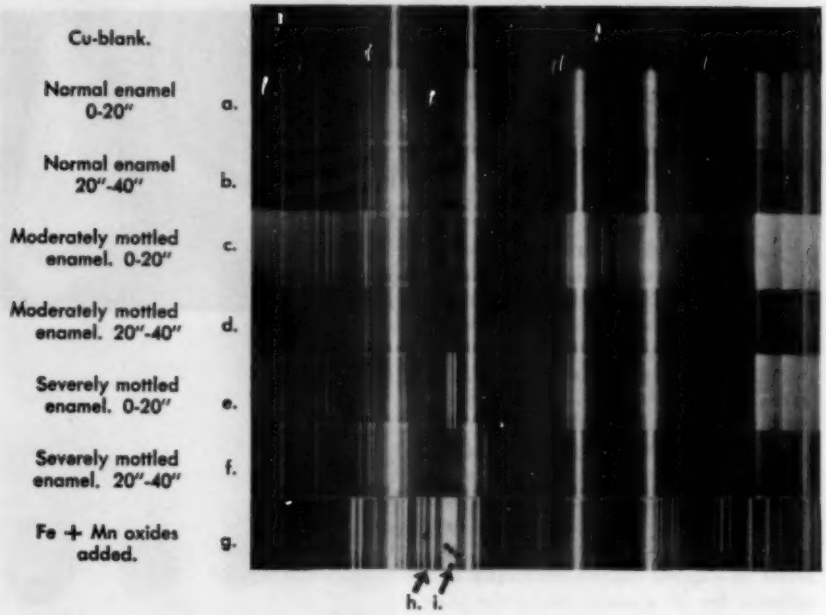

Fig. 2 • Spectrograms of normal, moderately and severely mottled enamel. h: Fe line. i: Mn line

erately and severely mottled enamel, it may be concluded that iron compounds do not cause the mottling.

It is not known if the stain is caused only by manganese compounds. Organic stains in foodstuffs and saliva also may contribute to the staining. In many cases of mottled enamel seen in South and East Africa, it was noticed that the degree of staining is higher in the anterior teeth than in the posterior. If the stain is caused by manganese compounds and stains in foodstuffs and saliva, it is difficult to explain this difference. Where the manganese compounds come from has not been established. An attempt will be made to determine the manganese compound by roentgen ray diffraction.

SUMMARY

Spectrographic evidence is presented to show that manganese is present in moderately and severely mottled enamel, but not in normal enamel. The amount of iron present is practically the same in the normal and mottled enamel. It appears that iron compounds do not cause the mottling. It is not known whether only manganese compounds cause the mottling or whether stains in foodstuffs and saliva also are causal factors.

Dental caries among a group of Greek children

George G. Philippas, D.D.S., M.S.D., Athens, Greece

In numerous studies that have been made of the dental system of ancient skeletal material of primitive peoples and of existing isolated native races and tribes in various parts of the world, it has been observed that, despite the variety of their origin and the difference in the kind of diet consumed, the incidence of dental caries is low.

In an effort to explain this phenomenon, a study has been carried on since 1949 in which a detailed examination has been made of the teeth and investing bone in skeletal material recovered from the archeological excavations in Greece and preserved in various museums. Thorough visual and roentgenographic examinations were made, supplemented by scale photographs.[1] This study continues and is being extended to all ancient anthropological material available in Greece.

During the course of this study, it was learned that there was a completely isolated place in Greece where the living conditions and diet consumed were primitive and where there was a total absence of dental or medical care for the inhabitants. Consequently it was decided to make an investigation, the main purpose of which was to study the dental condition of the inhabitants who had remained in the village from the time of birth up to the day of the examination.

The town, named Kitta, is a principal village in the province of Mani. It has an altitude of 200 meters and lies in the southern extremity of continental Greece. It is three miles northward from the sea and a four to five hour walk from the nearest town. To reach Kitta it is necessary either to walk or to go on mule back, riding through almost inaccessible paths.

Kitta is known for its dry climate, the amount of sunshine, its frequent strong winds, sparse vegetation, and for its infrequent rains. The only water available in this region is rain water which is collected and stored in cisterns especially made for this purpose. In order to determine the fluoride content of this water, two samples were taken. It was found to be 0.03 ppm. The analysis was performed by C. Tzoumerkas, chemist of the Société des Eaux des Villes d'Athénes-Pirée et Environs, by means of color standards. The tests were performed in the purification plant laboratories of the Société according to standard methods.[2]

There are approximately 200 inhabitants in the village of Kitta, mostly children and old people. Because of the bar-

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2. American Public Health Association. Standard methods for the examination of water and sewage, ed. 9. New York, American Public Health Association, 1946, p. 76.

Table 1 • Dental condition of children of Kitta examined in 1950

Age in yrs.	No. of boys	No. of girls	Total	Mean degree of occlusal wear		Caries	
				First perm. lower molar	Second decid. lower molar	DMF	def
4	2	0	2	..	1.0		0.0
6	2	3	5	0.5	1.6	0.2	0.4
7	4	2	6	1.0	2.1	0.3	0.0
8	5	3	8	1.2	2.5	0.1	0.0
9	6	2	8	1.4	2.5	0.0	0.0
10	6	3	9	1.8	2.8	0.0	0.0
11	12	2	14	1.3	2.3	0.2	0.3
12	10	5	15	1.5	2.6	0.07	0.3
13	7	1	8	2.1	3.0	0.0	0.0
14	3	0	3	2.0	..	0.3	..
15	1	0	1	3.0	..	0.0	..
All ages	58	21	79	1.6	2.4	0.12	0.13

renness of the region, the younger people move into larger towns in the south in order to better their living conditions. The people who remain have become accustomed to their simple ways of living. They rely on what is produced in their village and, in general, lead a quiet and primitive life. Their stone homes have small windows; the inhabitants spend most of their time in the open air, the older ones working in the fields, the children playing.

MATERIALS AND METHODS

The examination was limited to the child population of the village which consisted of 82 school children. Of these, three children who were away from the village at different intervals were excluded. Consequently, the group examined comprised 79 children, born and continuously living in the village up to the day the present investigation began. The group included 58 boys ranging from 4 to 15 years of age and 21 girls from 6 to 13. The number of children examined, their age and sex are shown in Table 1.

The oral examinations took place in the village school and were performed in full daylight by means of mouth mirrors and explorers. The carious lesions recorded were those that could be observed in a careful clinical examination. In the course of the examinations, no filled teeth were observed nor were there teeth missing or requiring extraction because of caries.

Each lesion was recorded on special forms. The degree of occlusal wear was measured according to the method described elsewhere.[3]

An attempt was made to gather some general information regarding the dietary habits of the subjects. This was done by interviewing the children and their parents.

DIETARY OBSERVATIONS

According to the data collected, the average length of time of breast-feeding of infants was 16 months. The diet then was changed gradually to that of the rest of the inhabitants of the village—a diet which was characterized as frugal, poor, monotonous and primitive, without the slightest touch of culinary art. Their three daily meals consisted of selections from the following:

For breakfast: Hard whole wheat bread which was baked only once every two weeks and is the basic food of their diet. One third of the children supplement the bread with olives (hard and withered). At certain periods of the year, half the children supplement the bread diet with hard cheese. Half of them drink milk in spring, from March to June.

For lunch: Whole wheat bread and one or two, seldom more than two, of

3. Philippas, G. G. Effects of function on healthy teeth: the evidence of ancient Athenian remains. J.A.D.A. 45:443 Oct. 1952.

the following: siglino (smoked pork), cheese, olives, smoked herring, sardines, potatoes, eggs, dry codfish, paspalas (a porridge made with olive oil, flour, water and pork fat), noodles and some cereals. Fresh meat and fish are eaten rarely. Except for some partridge and quail from September 10 to October 10, very little game is eaten.

For supper: Whole wheat bread and one, rarely two, of the following: noodles, cooked wild vegetables, cheese and olives.

Raw vegetables and fruit do not exist except for figs and wild prickly pears. No candy or sweets are eaten, but some refined sugar is used. Natural cooking salt prepared from the sea water is used.

DISCUSSION

Certain interesting data emerge from this investigation, despite the relatively small number of persons examined.

Less than half of the children examined had been born during World War II or shortly before the declaration of war against Greece, and the rest were born during the Occupation. Therefore, it would be expected that the latter group had lived under conditions of want and deprivation as a result of the war and occupation, as was true of the rest of the country. On the contrary, however, because of the remoteness and inaccessibility of the territory, the diet in Kitta remained unchanged.

From the description of the over-all food habits of the subjects included in the investigation, it is evident that their diet cannot be considered adequate. In addition, the consumption of sugars and sweets is extremely low.

Despite the quantity and quality of the food intake, one thing was noticeable: all the main items of the diet had a hardness and consistency that required thorough and prolonged mastication. In the absence of knives and forks, all of the children were obliged to make good use of all of their teeth.

The subjects of this investigation have lived continuously under uniform conditions of environment, habits and diet up to the time of the examinations; that is, for an average period of 9.5 years. Dental hygiene or dental care as it is known today was absent. None of the children knew what a toothbrush was, and no dentist or physician had ever visited this village until the day of our examination. The children's teeth were clean, with no calculus deposits. According to collected data, the exfoliation of the deciduous teeth and their replacement by permanent teeth took place within normal time limits. In one instance, a child 11 years old, a deciduous tooth that had remained beyond normal shedding time was observed.

Occlusion was normal, except for three instances in which there was irregularity (slight overlapping) in the area of the four lower permanent incisors. The gingiva was firm with normal interproximal spaces on the anterior teeth and normal buccolingual embrasures and interproximal spaces in the posterior teeth. The gingiva continued to the base of the contact point or surfaces of the proximating teeth so that the liability areas were eliminated and only the immune areas of the teeth were exposed. Slight gingivitis was observed in the area of the lower anterior teeth which coincided with the irregularity observed in the three instances mentioned previously.

An enormous amount of occlusal wear was observed on the deciduous and the permanent teeth (Table 1). This phenomenon has also been observed on the teeth of primitive peoples,[4-6] on the

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5. Klatsky, M. Function versus nutrition as controlling factor in dental health. An anthropologic survey. J.A.D.A. 32:1416 Nov.-Dec. 1945.

6. Krogman, W. M. Skeletal and dental pathology of early Iranian site. Bull. Hist. Med. 8:28 Jan. 1940.

teeth of ancient skeletal remains,[7,8] on deciduous and permanent teeth of skeletal remains found in excavations in Greece,[3,7] on contemporary primitive races or tribes,[9] and also on contemporary civilized individuals whose teeth are relatively immune to decay,[10] and on individuals who have lived since birth in regions where fluorine is present in high amounts.[11]

The mean degree of wear[3] found on the second deciduous molars in children grouped according to age fluctuated from 1.0 to 3.0 with an over-all mean degree of 2.4 (on a scale from 0 to 5) in all ages. Also, the mean degree of wear on the first permanent molars in children grouped according to age was found to be from 0.5 to 3.0 with an over-all mean degree of 1.6 (on a scale from 0 to 8) in all ages. The degree of occlusal wear observed on the deciduous teeth was higher than that on the permanent teeth of the same individual, and generally the degree of occlusal wear on the deciduous and permanent teeth increased with age. This increase, however, did not always occur in all individuals of the same age.

In comparing these data with the finding of surveys conducted on ancient skeletal material,[3] it was observed that the degree of wear on the contemporary individuals is somewhat lower than the degree of wear found on the deciduous and permanent first molars of children of corresponding ages who lived thousands of years ago. Obviously, the teeth of the children of Kitta have a higher degree of wear than will be found in children in an average daily practice. The intense occlusal wear found particularly on the deciduous teeth of the children of Kitta possibly may be attributed to the vigorous mastication required by the kind of food consumed. Or again, it might be due to some other unknown factor. This occlusal wear was accompanied by incisal and proximal wear, and the contact points were changed to wide flat surfaces.

The data in Table 1 show that the children of Kitta have either great resistance or immunity to dental caries, or that the dietary conditions are unfavorable to the development of caries. Of the 79 children examined, only 11 developed caries on the deciduous and permanent teeth. The remaining 68 children were completely free from caries. Of the 11 with caries, there were nine boys and two girls.

Table 1 indicates that the children, when their age is taken into consideration, generally have considerable occlusal and proximal wear, as well as high resistance to dental caries; also, that in the children with decayed teeth, the degree of wear is lower than the mean degree of wear of the total number of children belonging to the same age groups. The opposite is true in the corresponding ages of children free from caries. Furthermore, careful study of Table 1 suggests that the wear of the teeth (occlusal, incisal, proximal) observed in those individuals is generally in contrast to the incidence of caries, and that this contrast becomes especially pronounced in the caries-free groups of children belonging to the ages of 9, 10, and 13 (Table 1) in whom the mean degree of wear is slightly higher than the mean degree of wear in older children.

The susceptibility to caries of mandibular and maxillary teeth and the various specific tooth areas liable to decay are shown in Table 2. This table indicates that all surfaces of anterior teeth of both jaws, as well as the lingual and buccal surfaces of the posterior teeth, were found free from caries. It also shows a low rate of attack by caries in the pos-

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Table 2 • Distribution of carious surfaces in teeth of 79 children examined*

Anterior teeth					Posterior teeth				
	Upper		Lower			Upper		Lower	
Surface	Decid.	Perm.	Decid.	Perm.	Surface	Decid.	Perm.	Decid.	Perm.
Incisal	0	0	0	0	Occlusal	1	1	2	7
Mesial	0	0	0	0	Mesial	1	0	0	1
Distal	0	0	0	0	Distal	0	0	6	0
Labial	0	0	0	0	Buccal	0	0	0	0
Lingual	0	0	0	0	Lingual	0	0	0	0

*Sixty-eight children were found to be completely free from dental caries.

terior teeth and, of those attacked, the lower teeth were more liable to caries than the upper. The pits and fissures of the first permanent molars and the distal surfaces of the deciduous molars showed the highest proportion of caries. In no case was the pulp exposed by dental caries.

SUMMARY AND CONCLUSIONS

The present study included 79 of the 82 children who had been born and reared in the village of Kitta and who were residing there at the time of the examination. The children were without dental or medical care. The only water available for drinking was rain water.

The incidence of caries was found to be extremely low. Eruption, exfoliation, replacement of deciduous teeth and occlusion were normal. The gingiva of the children was in good condition; it was firm about the posterior teeth, with normal spaces between the anterior teeth. Considerable occlusal, incisal and proximal wear was also observed which coincided with the increased resistance to caries. Furthermore, the immunity of the anterior teeth to caries, the low incidence of caries on the posterior teeth, the general immunity to caries in certain areas and surfaces of those teeth, and the considerable wear (occlusal, incisal, proximal) which accompanied it, furnish evidence that a high degree of function and self-cleansing action took place during mastication.

It may be concluded, therefore, without excluding other possible factors, that food of such consistency creates from the beginning the habit of intensive biting, cutting and masticating. Undoubtedly this habit is an important factor which contributes to a balanced development of the dental apparatus. Thus, the children in question have teeth and investing tissues that adapt themselves in such a way as to maintain balance and provide favorable conditions for these organs.

There appeared to be general resistance to disease, almost a nonexistence of susceptible areas and a low incidence of caries.

9, Hippocratous Street

Fame • Notoriety may be achieved in a narrow sphere, but fame demands for its evidence a more and prolonged reverberation. *James Russell Lowell, A Great Public Character.*

Microscopic investigation of root apexes

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The necessity for an exact and complete knowledge of the topographic and microscopic anatomy of the dental apex has been recognized. That these studies have not been made has been acknowledged by Orban,[1-4] Blayney,[5-8] Skillen,[9,10] Grove,[11-16] Ono[17] and others.

Anatomy, of course, is the foundation of the art and science of healing. The terminal part of the root canal and the tissues which surround it are the center of the most activity and the greatest concern in the treatment and filling of the root canal. The works of Preiswerk,[18] Fischer,[19,20] Hess,[21] Barrett[22] and Davis[23,24] and others which date from the end of the last century and from the beginning of the present one, had as their almost exclusive center of interest the number of root canals and their divisions.

Up to the present time the endodontist has worked with extremely poor data. The roentgenogram of the apex seldom offers a clear view of the terminal part of the canal; therefore, one is obliged to use information not scientifically proved. Much of the information available was obtained from a limited number of studies, mostly macroscopic, of apexes principally in transverse sections of the root.

The prevailing idea of the topographic and microscopic anatomy of the apex, that is, the direction, form, diameter and so forth of the terminal part of the canal, the location of the foramen, its size and the thickness of the cementum, is completely erroneous. Blayney, Grove and many other authors share this same opinion. The extreme assertions about the

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Professor of postgraduates, National University of Mexico.

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apex made by Grove's opponents have produced only greater confusion.

MATERIAL AND METHOD

Two hundred and sixty-eight teeth were obtained, 95 per cent of which were extracted from cadavers. Some of the teeth had superficial caries. All the teeth were without periapical disease and had been in normal occlusion.

Only teeth from cadavers whose age at death was known were used. One series of teeth were from those between 18 and 25 years and the other series were from those 55 years and older.

After the teeth were cleaned, the roots were cut, and the pulp was extracted with a barbed broach that reached only the apical third. A drop of ink was immediately placed on the opening of the canal and driven into it with a thin and smooth broach until the ink appeared in the foramen or foramens. With a magnifying glass it was determined whether the foramen (when there was only one) was to be found at the end or in the center of the apex. In this instance the roots were equally usable for sectioning, either mesiodistally (MD) or vestibulolingually (VL). If the foramen was located somewhat toward the mesial or distal side of the apex, the cut was made mesiodistally; if it was toward the vestibular or lingual side, the section was made accordingly. If there were two or more foramens, the section was on the same plane in order to enclose both or all of them.

The sections were obtained by the initial grinding with a motor stone of the two parallel surfaces of the root (only in the last 4 or 5 mm. of the apex) until the canal colored with ink appeared. With the guide of the magnifying glass, diamond wheels and disks thinned the root. The final polishing then was accomplished with sandpaper disks. Many roots were wasted or broken in the process of thinning. In others it was impossible to obtain data on all 21 factors to be investigated.

The roots were submerged in a small well with eosin and studied under the microscope with a magnification of 21 diameters, or of 56 diameters when necessary. The measurements of the roots were made with a 37.5 diameter ocular micrometer. The data obtained from these measurements were noted in special columns, and arithmetical averages were computed (Tables 1 and 2). All the preparations were sketched and classified (Fig. 1).

The age group 18 to 25 was chosen because the apex is completely formed at this stage, even in the third molars. It has been estimated that when a tooth occludes with its opponent (Table 3)[25] three years are necessary for the completion of the apex. Few teeth were discarded when observed with a magnifying glass and incomplete apexes or foramens were noted, especially third molars. The second group included teeth from people 55 years and older.

Approximately one half of the sections were vestibulolingual. The other half were mesiodistal, the only aspect seen in the roentgenogram.

In most instances eight teeth of each kind were obtained, that is, eight upper central incisors, eight upper lateral incisors and so forth.

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Table 1 • Summary of data concerning dental apex

	18 to 25 year group				55 year and older group			
	VL No.	MD No.	Total No.	%	VL No.	MD No.	Total No.	%
Center of foramen in apical vertex or center (1)	29	34	63	32	24	15	39	20
Center of foramen outside apical vertex or center (2)	62	69	131	68	58	88	146	80
Union CDC clear with magnification of 21 diameters (14)	103	130	233	57	145	148	293	74
Union CDC clear only with magnification of 56 diameters (15)	73	54	127	31	41	48	89	21
Union CDC not clear (16)	15	9	24	6	1	3	4	1
Union CDC nonexistent (17)	10	14	24	6	5	8	13	4
Teeth obtained			142				126	
Roots separated from crowns			197				186	
Apexes prepared			208				194	
Principal canals studied			225				211	

This research was carried out to help improve the treatment of root canals; therefore, the main canal, the most central and vertical one, or the one of the greatest caliber, that is, the one that the endodontic instrument would follow, seemed most interesting. The lateral, secondary and accessory small canals, although sketched and noted, were not studied because in most instances they do not present a clinical problem. In the bifurcations and deltas the canals which most approached the principal axis were studied, that is, the ones which offered the greatest possibilities for the endodontic instrument to enter so that the principal foramen could be reached.

The foramen in this study is understood to be the circumferential line of the canal that forms an angle above the surface of the root, or, in other words, the lineal circumference of the end of the canal (Fig. 2, below, #4).

RESULTS

In 32 per cent of the roots of the teeth in the first series (the 18 to 25 year group), the center of the principal foramen was localized in the apical vertex or center (Fig. 3, above) and generally followed the axis of the canal (Fig. 2, below left, #1 and Table 1, #1). In the teeth of the second series (the 55 years and older group) the coincidence of the center of the foramen and the vertex or center of the apex was found in 20 per cent (Fig. 2, below right, #1 and Table 1). The remaining 68 per cent of the roots in the first series had the center of the foramen somewhat outside or toward some side of the center or vertex of the apex (Fig. 2, below left, #2), whereas in the second series (Fig. 2, below right, #2), 80 per cent were located outside the center or vertex of the apex (Table 1, #2).

The average distance between the vertex or apical center and the center of the foramen was 495 microns in the first series (Fig. 2, below left, #3) and 607 microns in the second series (Fig. 2, below right, #3 and Table 2).

The average diameter of the foramen in the first series (Fig. 2, below left, #4) was 502 microns and that of the second

series (Fig. 2, below right, #4) was 681 microns (Table 2, #4).

The diameter of the foramen is seldom found to be perpendicular to the axis of the apical canal; nevertheless, instances of this situation of the diameter were noted. A diameter was measured whose line departed from the end of the foramen closest to the axis of the canal, crossed the axis of the canal perpendicularly and ended at the other end inside the canal; therefore, the perpendicular diameter was smaller than the diameter of the foramen. The average diameter of the foramens perpendicular to the axis of the apical canal in the first series (Fig. 2, below left, #5) was 375 microns and in the second series (Fig. 2, below right, #5) was 425 microns (Table 2, #5). As a result of the separation of the two diameters, a base of a triangle is formed (Fig. 2, below, #6). This base measured 255 microns in the first series and 287 microns in the second series (Table 2, #6).

Much fruitless polemic between Grove and his opponents could have been avoided had they come to an agreement on terminology. Nobody can doubt the existence of a uniting line between the cementum and the dentin (Fig. 3, CD). This union (with very few exceptions, such as that shown in Fig 3, above) arrives at the canal, a point that shall be

Table 2 • Measurements in dental apex

	18 to 25 year group							55 year and older group						
	VL		MD		Total		%	VL		MD		Total		%
	Av.*	No.	Av.*	No.	Av.*	No.		Av.*	No.	Av.*	No.	Av.*	No.	
Distance from center of foramen to apical center (3)	510		487		495			510		661		607		
Diameter of foramen (4)	563	91	449	103	502	194		694	82	661	103	681	185	
Diameter of foramen perpendicular to axis of canal (5)	491		318		375			451		403		425		
Unevenness of foramen (6)	302		202		255			257		313		287		
Diameter of canal at height of two even CDC (7)	346	43	270	39	306	82	53	282	55	274	54	274	109	60
Diameter of canal at apical union CDC (8)	310	28	280	39	298	67	47	280	29	287	39	268	68	40
Diameter of canal at cervical union CDC (9)	349	35	302	43	327	78		315	33	247	42	285	75	
Minor diameter of canal in cementum (10)	253	14	246	23	255	37	26	246	27	219	23	240	50	29.5
Minor diameter of canal in dentin (11)	331	30	239	30	299	60	42	299	21	218	29	254	50	29.5
Minor canal diameter at union CDC (12)	250	22	216	25	244	47	32	207	32	217	38	210	70	41
Distance from foramen to minor canal diameter (13)	566		454		524			600		696		659		
Thickness of cementum on right side canal (18)	467		522		508			875		734		802		
Thickness of cementum on left side canal (19)	514		496		505			882		672		767		
Thickness of cementum outside canal (r. side) (20)	315		344		343			618		580		619		
Thickness of cementum outside canal (l. side) (21)	289		340		326			637		464		551		

*In microns.

called "cemento-dentino-canal (CDC) uniting point" (Fig. 3, below, and Fig. 2, below, #14). What is in doubt is the place in which such a point is found, inasmuch as it is not a fixed point. From the measurements of the sections for this study, however, an average can be obtained that will give an approximate location. The lengthwise cutting of an apex in any direction which crosses the canal will give two points CDC, one on each side of the section of the canal.

In 53 per cent of the first series these two points CDC were found in each canal and at the same level or height (Fig. 2, below left, #7). The average diameter of the canal between these two points was 306 microns. In the second series the two points CDC were found at the same level in each canal in 60 per cent, and the average diameter was 274 microns (Table 2, #7). The average diameter of the vestibulolingual preparations was slightly greater than the mesiodistal ones in both series.

In the remaining 47 per cent in the first series and in 40 per cent in the second series, the two points CDC were not found on the same level (Fig. 2, below right, #14a and #14b) but the apical one was closest to the foramen (Fig. 2, below right, #14a). The average canal diameter at this level was 298 microns in the first series and 268 microns in the second series (Table 2, #8). The other point CDC, the cervical, was farthest from the foramen and therefore closer to the dental cervix (Fig. 2, below right, #14b) with an average diameter at this level of 327 microns in the first series and 285 microns in the second series (Fig. 2, below right, #9 and Table 2, #9).

In order to determine where the minor diameter of the apical portion of the canal was located, the following data were obtained: In 26 per cent in the first series and in 29.5 per cent in the second series, the minor diameter of the canal was localized in the cementum portion of the canal with an average of 225 microns in the first series and 240 microns in the second series (Table 2, #10).

In 42 per cent of the first series and in 29.5 per cent of the second series the minor diameter of the canal was found in the dentinal portion of the canal with an average of 299 microns in the first series (Fig. 2, below left, #11) and of 254 microns in the second series (Table 2, #11).

In the remaining 32 per cent of the first series and in 41 per cent of the second series, the minor diameter of the canal was found exactly at the height of the two even points CDC, that is, at the

Fig. 1 • Dental apexes. Above left: Lower lateral incisors, older age group. Vestibulolingual sections except mesiodistal section at far right. Above right: Upper third molars, older group. From left to right—lingual root, distal root, mesial root, mesiodistal sections; far right, distal root, vestibulolingual section. Below left: Lower second molars, younger group. Two at left, mesial roots, mesiodistal sections; at right, distal roots, vestibulolingual and mesiodistal sections respectively. Below right: Lower second bicuspids, younger group. Two at left, mesiodistal sections; at right, vestibulolingual sections

Table 3 • Average ages at which permanent teeth arrive at occlusion

	Dental classification						
	1	2	3	4	5	6	7
Upper arch	8-10-9*	9-8-27	12-4-26	10-10-13	11-7-19	7-3-4	13-2-28
Lower arch	7-10-11	8-10-21	11-5-26	11-3-24	11-7-19	7-3-17	12-7-14

*Denotes 8 years, 10 months and 9 days.

same level. The average diameter was 244 microns in the first series and 210 microns in the second series (Table 2, #12).

The distance between the center of the foramen and the narrowest part of the apical canal was an average of 524 microns in the first series and 659 microns in the second series (Fig. 2, below, #13 and Table 2, #13).

The union or point CDC is not always found; therefore, it was studied from histological sections. In 57 per cent of the sections of the first series and in 74 per cent of the second series, this union was precise and was distinctly visible with a magnification of 21 diameters (Fig. 2, below left, #14 and below right #14a and b and Fig. 3, below, CDC). In 31 per cent of the first series and 21 per cent of the second series, a greater magnification was necessary and 56 diameters was used. In 6 per cent of the first series and 1 per cent of the second series, the point CDC was so confusing that its location could not be determined with any magnification (Table 1, #16). In 6 per cent of the first series and 4 per cent of the second series, the point CDC did not exist, either because the line of union between the cementum and dentin did not reach the canal or because the cementum was nonexistent (Fig. 3, above and Table 1, #17).

It is widely known that the thickness of the cementum diminishes from the apex to the dental cervix and that the cementum thickens with age. The thickness of the cementum on each side of the canal was measured, and the following results were obtained: On the right side of the canal the thickness of the cementum in the first series was an average of 508 microns and 802 microns in the second series (Fig. 2, below, #18 and Table 2, #18). The thickness of the cementum on the left side of the canal was an average of 505 microns in the first series and 767 microns for the second series (Fig. 2, below, #19 and Table 2, #19).

It was attempted to determine whether there exists any relationship between the teeth that have been in occlusion the longest and the thickness of the cementum. The order of eruption is known to be that expressed in Table 4.[25] The order of the teeth in the first series with the thickest cementum on the right side of the cementum canal is given in Table 5. A comparison of the tables indicated that there was no relationship. The thickness of the cementum probably depends on the strength of mastication rather than on the length of time the teeth have been in occlusion.

The thickness of the cementum was measured somewhat outside the canal where it often thins quickly. The average thickness of the cementum on the right side of the canal in the first series was 343 microns and for the second series 619 microns (Fig. 2, below, #20 and Table 2, #20). The measurement on the left side of the canal was 326 microns for the first series and 551 microns for the second series (Fig. 2, below, #21 and Table 2, #21).

It was believed that the canal is more or less conical, following in its apical third the same direction as the middle and cervical third and ending in the ex-

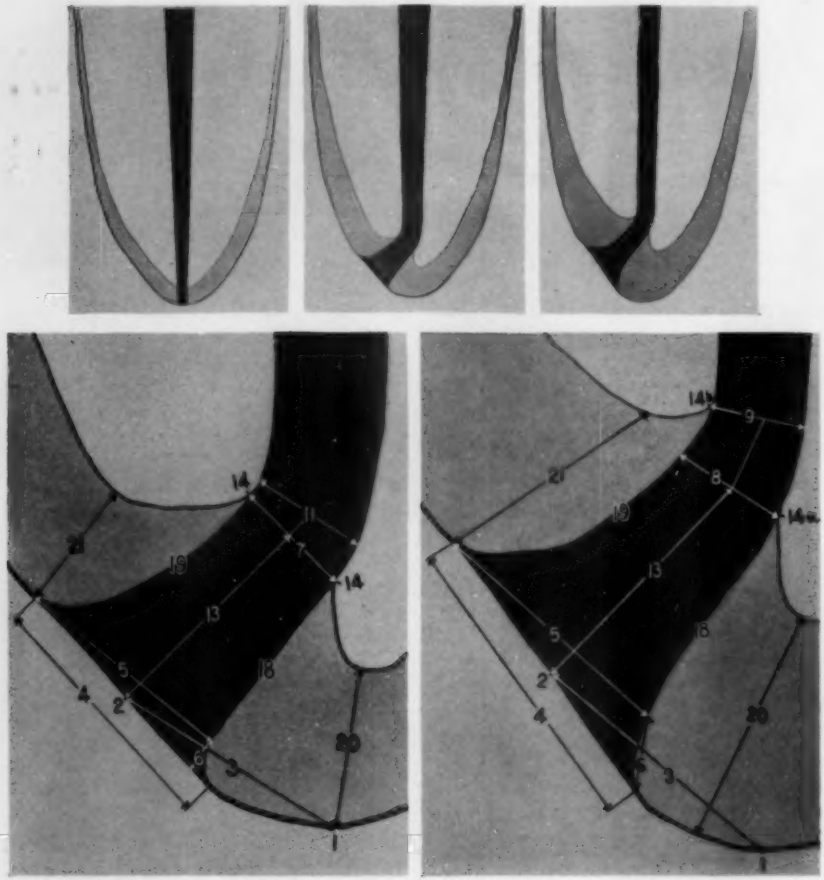

Fig. 2 • Above left: Erroneous concept of apex. Above center: Apex of younger group from averages obtained. Above right: Apex of older group according to averages obtained. Below: Apexes of younger group (left) and older group (right)—1, vertex or apical center; 2, center of foramen; 3, distance between vertex or apical center and center of foramen; 4, diameter of foramen; 5, diameter of foramen-canal perpendicular to axis of canal; 6, unevenness of two diameters; 7, diameter of canal at height of two even CDC union points; 8, diameter of canal at height of apical CDC union points; 9, diameter of canal at height of cervical CDC union point; 11, place of minor diameter of canal (42 per cent); 13, distance between center of foramen and minor diameter of canal; 14, union points of cementum, dentin and canal, 14a (apical), 14b (cervical); 18, cementum of right side of canal (note thickness); 19, cementum of left side of canal (note thickness); 20, cementum of right side at point at which it thins rapidly; 21, cementum of left side at point at which it thins rapidly

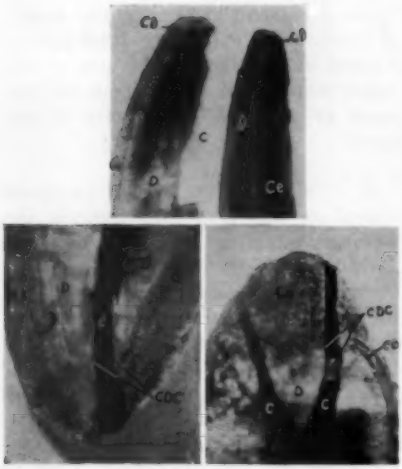

Fig. 3 • Apexes. Above: Upper cuspid of 21 year old, mesiodistal section, magnification 40 diameters. Below left: Distal root of lower third molar of 24 year old, mesiodistal section, magnification, 40 diameters. Below right: Mesial root of upper second molar of 58 year old, vestibulolingual section, magnification, 22 diameters. C, canal; D, dentin; Ce, cementum; CD, cemento-dentin union line; CDC, cemento-dentino-canal union point

treme apex with a very narrow foramen. Figure 2, above left, shows such an erroneous picture of the apex, above center shows a schematic representation of the apex in the majority of roots of those 18 to 25 and above right shows the apex as it is in the majority of roots of those 55 and older.

In many roots of the group over 55 years it was impossible, even with a magnifying glass, to find the canal after separating the roots from the crowns. It was found only after cutting away sections of the root in the middle or even apical third, as in the apex farthest to the right in Figure 1, above right, in which the canal was found only in the last 3 mm. of the apex.

The diameters of the foramens of the second series were found to be larger than those of the younger group.

It is proved, therefore, that textbooks are in error which refer to the reduction of the root canal as being caused by the strangulation of the pulp tissues because of the narrowing of the foramen with increase in age. This biological process is different from what had been thought, and should be investigated.

SUMMARY

The purpose of this research was the study of the microscopic basis of the anatomy of the dental apex in order to improve endodontic technics. Four hundred and two healthy dental apexes, from teeth extracted mostly from cadavers 18 to 25 or 55 years and older at death, were studied and measured by the ocular micrometer.

CONCLUSIONS

1. The center of the foramen deviates more and more from the vertex or apical center with an increase in age and resulting thickening of the apical cementum.

2. The diameter of the foramen increases with age because of the apposition of new layers of cementum. The average diameter of the foramen in the 18 to 25 year age group and in the group 55 years and older is somewhat larger vestibulolingually than mesiodistally.

Table 4 • Order of eruption of permanent teeth

	Dental classification							
	1	2	3	4	5	6	7	8
Upper arch	4	6	10	7	12	1	14	15
Lower arch	3	5	9	8	11	2	13	16

Table 5 • Order of teeth with thickest cementum

	Dental classification							
	1	2	3	4	5	6	7	8
Upper arch	6	12	8	3	11	4	10	16
Lower arch	15	13	1	9	14	5	2	7

3. Because of the existence of an unevenness in the extremities of the diameter of the foramen and because of the funnel shape of the cementum canal, this portion of the canal cannot be filled hermetically, unless it is overfilled with cement.

4. In the majority of sections the two points of union cemento-dentino-canal are found at the same level. In others, one point CDC was closer to the foramen than the other.

5. The minor diameter of the root canal is found usually in the dentin, just before the canal penetrates the cementum portion, and from that point it gradually widens to the foramen, taking on a funnel shape. A constricted portion exists in the canal, but this constriction is not located in the foramen. The funnel-like aspect of this terminal part of the canal is more marked in older people, because of the larger diameter of the foramen and because of the smaller diameter of the canal.

6. The average thickness of the apical cementum was above 0.5 mm. in the younger age group and thicker in the older age group. The thin layers of cementum often found introduced over the dentin covering the internal ends of the dentin tubules in the last portion of the dentinal canal and the oblique inclination and occasional verticality of the tubules in the same portion directed toward the dental cervix give justification for filling the root canal only as far as 0.5 mm. before reaching the foramen.

Lerma 335-2

Dangers of Active Ignorance • The appearance of science as a major social force has created many problems. We are justly proud of our American civilization. But how much scientific culture does Mr. Average American have? Our educational system has failed miserably in raising the culture of our people to an appreciation of the need of basic science. There is even less of what James B. Conant has called an "Understanding of Science."

Mr. Average American has not been taught to think critically or to weigh evidence. In the current controversy over the incorporation of fluorides in drinking water the public uses personal testimonials on the same basis as scientific evidence. Should our amusement not be tempered with sadness when we read "I found that drinking one bottle of Hadacol cured my rheumatism?" With even more sadness, we find some scientifically trained people thinking in the same fashion. . . .

In very few areas of our educational system have the basic facts and methods of science been properly incorporated and taught. The result is that the majority of our people are scientifically "illiterate." This creates an extremely dangerous situation, anticipated by Goethe when he said, "There is nothing more frightful than an active ignorance." *Ward Pigman, "Wanted: More Ivory Towers," The Scientific Monthly 80:252 April 1955.*

Establishment of vertical dimension

Juan Gomez Sabaté, Montevideo, Uruguay

The achievement of correct vertical dimension is one of the most neglected steps in the preparation for complete dentures when compared with the highly improved methods of obtaining impressions, centric relation or articulation. Nevertheless, the procedure to establish vertical dimension is as important as any other; an error in its determination may lead to esthetic and functional failure of the prosthesis and may also be an important factor in alveolar resorption.

REST POSITION

The edentulous jaw can assume an infinite variety of positions in its vertical course from total opening to closing and contact of the alveolar ridges. Only one of these positions corresponds to vertical dimension in occlusion; this position, however, cannot be established by itself. The problem of determination was simplified when it was discovered that the dimension sought for was in direct relation to a definable position—the rest position—which thus became the key to vertical dimension.

Every person with a natural dentition has a rest position of the mandible and a position when the teeth are in occlusion; between the teeth is a freeway space. The amount of space may vary from one individual to another. This space must of necessity be reproduced in artificial dentures. If there is excessive space, rapid and prejudicial resorption of the alveolar ridges will occur. If there is insufficient space, functional, phonetic and esthetic disorders will develop.

Disagreement exists as to whether the rest position is stable throughout life or whether there is a progressive shortening of the bite. Niswonger[1] and Thompson and Brodie[2] have maintained that the rest position is the result of a condition of equilibrium between groups of muscles—the muscles of mastication and the depressor muscles, and those muscles which keep the head in equilibrium in the sagittal plane.

The mandible is only a link in the muscular osseous chain which descends from the cranium to the sternum. It is, therefore, not independent, but belongs to a coordinated system, with a definite duty, and its position is the result of the functioning of the whole system.

VARIABILITY OF REST POSITION

The prosthetic rest position is one in which all the muscles of the system are perfectly controlled by one another without drawing or contracting, with the vertebral column erect and the head not inclined in any direction. The position of

1. Niswonger, M. E. Rest position of the mandible and centric relation. J.A.D.A. 21:1572 Sept. 1934.
2. Thompson, J. R., and Brodie, A. G. Factors in the position of the mandible. J.A.D.A. 29:925 June 1942.

the head may influence the position of the mandible and cause some change in the rest position.[3]

If the head is inclined backwards, the same intermaxillary relation may be maintained, but in this case a slight contraction of the elevator muscles is necessary to counterbalance the drawing of the suprahyoid and infrahyoid muscles and integuments.

If the elevator muscles relax, the intermaxillary distance increases and the mouth half opens, which also changes the rest position. If the head is inclined forward, the mandible tends to approach the maxilla through a mechanism inverse to the one already mentioned; thus, a new rest position is produced and the freeway space may disappear.

When the head or head and trunk is inclined to one side, the mandible drops to the same side if the controlling muscles are at rest.

In addition to the foregoing considerations, the cephalometric research work by Brodie and Thompson[2] would seem to prove that the rest position is permanent; they also maintain that the angle of the mandible does not change with growth or loss of teeth as has so often been stated. Other writers, without any foundation in fact, maintain that this intermaxillary relation varies in the course of time through such factors as mandibular or articular deformation and alteration of muscular function. Another factor that might be added is the difference in weight of the mandible when 16 teeth and a considerable amount of alveolar bone are missing.

Despite these factors, there still is a rest position which would not be the patient's former one but would be the normal position for the moment. Even assuming that those who maintain that the rest position is variable are right, the question arises as to whether it would be correct to attempt to recover the vertical dimension that an old man, say, may have possessed in his youth. First, there is nothing by which to judge what this vertical dimension may have been. Second, if all the conditions have changed, what was normal in youth is no longer so. Last, the variation which may have ensued must have been a progressive decrease in height. To attempt to increase it, that is, to bring it beyond the present rest position, would imply exposing the maxillary bones to rapid resorption.

The determination of physiological rest position, and the reduction of this measurement by 2 or 3 mm., is the most accurate, scientific and simple method to establish correct vertical dimension in occlusion.

TECHNICAL PROCEDURE

Two fixed points, one in the upper part of the face and the other in the mandibular zone, are selected. The former may be a wrinkle, mark or mole, or may be simply an ink line on an immobile portion of the integument of the nose or the forehead. It must be borne in mind, however, that an immobile integument cannot be found on all patients. There are some whose changeable expression causes the skin to move, and this may cause an erroneous measurement.

Even greater care must be taken in the selection of the point on the mandible. Some times a wrinkle or an inked line will suffice, but generally the integument which covers the chin is extremely mobile in relation to the underlying bone.

The forward and backward movements of the head, as has already been mentioned, may change the rest position; they likewise cause another variation—they displace a mark on the chin either upward or downward by traction or by the pushing of the soft tissues of the neck and, as the upper point remains

3. Sicher, Harry. Positions and movements of the mandible. J.A.D.A. 48:620 June 1954.

Fig. 1 • Left: Normal position. Points of compass coincide with marks. Center: Patient's head leaning forward; chin mark rises. Right: Head leaning backward; chin mark drops

Fig. 2 • Left: Patient without lower baseplate in mouth. Right: Lower baseplate inserted; mark drops

immobile, the distance between the marks changes (Fig. 1).

Another factor that must be borne in mind is that the lower lip of an edentulous patient drops into the buccal cavity bringing with it the chin integument. The fixing of the lower baseplate with its biterim, while supporting the lip, causes the mark previously drawn to descend (Fig. 2). For this reason, all measurements must always be taken with the lower baseplate in the mouth. The difficulties can be overcome if the mark on the chin is omitted.

As the most immobile zone of the mandibular region is the alveolar ridge, a properly adapted baseplate fixed with adhesive powder, or preferably relined with zinc oxide-eugenol paste, to the rim of which is fixed a small wire which protrudes through the lips at rest without exercising pressure on them, provides the second point (Fig. 3, left).

A divider compass is now used as follows:

1. While the patient is seated comfortably and without changing his position in the course of all these operations, the lower baseplate with its wire is inserted in the mouth. The patient is then asked to keep his face normal, and to make no effort either to open or close his mouth.

2. The compass is opened until the points coincide with reference points (Fig. 3, center).

3. This operation is repeated until it is definitely established that the patient's mandible is in rest position.

4. The upper baseplate to which is attached a wax biterim in the zone of the molars only is inserted (Fig. 3, right). The wax rim is of such a height that the distance between the points is the same as

Fig. 3 • Left: Lower baseplate with piece of wire inserted. Center: Patient with lower baseplate and wire in mouth. Determination of rest position. Right: Upper baseplate showing biterims in molar zone

or greater than that derived when the mandible is in rest position.

5. The compass opening is then reduced 2 mm.

6. The rim of the upper baseplate is softened in a flame. The baseplate is returned to the patient's mouth and the patient is told to close in such a tone that he will not realize the importance of the act. If the patient closes without thinking, he is much more apt to do it correctly and in centric occlusion.

7. With the biterims in contact, the patient is told to exert pressure until the points of reference coincide with the compass points. Thus vertical dimension with the teeth in occlusion has been achieved; in other words, the rest position reduced by 2 mm.

For the patients in whom the lower teeth are present, the technic is much the same. The lower reference point may be the incisal edges, the tooth necks or a mark on the chin, but the drawbacks to this last-named spot must be kept in mind.

This technic has its advantages and its objectionable features. Among the former may be mentioned simplicity, rapidity and ample margin of accuracy, and the satisfaction of having almost eliminated guesswork by having something definite to refer to such as the rest position.

An objectionable feature that detracts from the margin of accuracy is that part which depends not on the operator but on the patient. Fortunately, in most instances, patients repeat their rest position frequently enough to insure accuracy in its determination. With the other patients, taking slightly more time generally will bring success.

Agraciada 1442 P.1

Good Books • The man who does not read good books has no advantage over the man who can't read them. *Mark Twain.*

COUNCIL ON LEGISLATION

Association's viewpoint on military and veteran dental care proposals

The Council on Legislation presented the Association's viewpoint on three items of legislation during early March.

On March 1, J. Claude Earnest, vice-chairman of the Council, submitted a written statement to a Subcommittee of the House Armed Services Committee in connection with H.R. 2967, the proposed National Reserve plan. Dr. Earnest urged Congress to limit the dental care of persons on duty for training purposes only to emergency conditions. He also urged that posttraining dental benefits be restricted to care for dental conditions and injuries directly traceable to military duty.

On March 10, Rudolph H. Friedrich, secretary of the Council on Dental Health, appeared before two House committees, Appropriations and Veterans Affairs, to testify on the dental program of the Veterans Administration. Dr. Friedrich urged principally that the present system of providing outpatient dental care on a one-time completion basis be continued.

The Association's testimony before the Armed Services Subcommittee and the Subcommittee on Hospitals of the Veterans Affairs Committee follow.

STATEMENT OF THE AMERICAN DENTAL ASSOCIATION TO SUBCOMMITTEE NO. 1 OF THE HOUSE ARMED SERVICES COMMITTEE ON H.R. 2967, THE NATIONAL RESERVE PLAN

The American Dental Association has taken no policy position on the need for a National Security Training Corps or the other purely military features of the "National Reserve Plan" proposed within H.R. 2967. The Association is, however, concerned with the dental care to be provided to members of the National Security Training Corps during their six-month active duty period and the posttraining dental care to which trainees will become entitled upon their discharge from active duty. The Association is also concerned with the effect that H.R. 2967 may have upon future enrollments in the dental schools.

DENTAL CARE FOR TRAINEES

Although it may be impractical to define in the text of the legislation the dental care to be provided to trainees, the Association believes that it would be advisable for this committee to include in its report some firm guides for the training agencies to use in determining the extent of that dental care program.

The American Dental Association recognizes that the military services must have an adequate staff of dental officers to assure that the dental health of persons on active military duty is protected. But the Association is equally aware of the need for a sufficient number of dentists to care for civilian dental health needs. Neither the military nor civilian community, then, should have a disproportionate share of the available dental manpower. The distribution, to be equitable, must be governed by relating the available number of dentists to the dental health requirements of the total population. The critical dental manpower problem has been treated exhaustively in two recent government publications: *Mobilization*

and Health Manpower prepared by the National Health Resources Advisory Committee to the Office of Defense Mobilization, and the *Report on Federal Medical Services* prepared by the Task Force on Medical Services of the Commission on Organization of the Executive Branch of the Government. Those agencies made intensive studies of the federal health programs and related staffing problems. Their reports and recommendations, in the Association's opinion, should be given careful consideration.

The Association supports the fundamental principle that responsibility for personal health care rests primarily with the individual and his family. Where the military mission requires that persons on active military service receive comprehensive dental care from the federal government, those individuals should receive that care. The Association does not believe, however, that the federal government should undertake to correct the accumulated and neglected dental conditions of trainees who will be on active duty only six months. It is obvious that the training period proposed within H.R. 2967 must be devoted chiefly to military indoctrination. Extensive dental rehabilitative services for trainees might, then, seriously interfere with the military objectives of the training program. The Association recommends, therefore, that the dental care program for members of the National Security Training Corps be limited to emergency dental treatment of injuries, acute oral infections, or other painful conditions. That program will assure the trainee of the corrective treatment necessary to enable him to meet, and to keep him fit for, the physical hardships of a relatively short period of military training.

The reserve plan legislation contemplates a voluntary system of enlistment in the National Security Training Corps. With a voluntary system for selecting the Training Corps members, the military might well select those who are best suited physically to enter the training program. Selection on that basis would assure that only a minimum amount of training time would be devoted to physical processing. The present system for inducting and enlisting persons into military training and service establishes a bare minimum of dental standards to be met. Under the present physical standards for Armed Forces' members, a person meets the dental requirements if he is "free from gross dental infections, and has a minimum requirement of an edentulous upper jaw and/or an edentulous lower jaw, corrected or correctible by a full denture or dentures." The Association believes that Congress and the military services should consider the establishment of separate dental standards for admission to the National Security Training Corps. Those standards should, of course, be set at a level which will provide the number of volunteers required. On the other hand, the dental standards to be met by trainees should exclude individuals who might require extensive mouth rehabilitation. The incorporation of higher dental standards for trainees would, furthermore, encourage youths eager to participate in the program to have their dental conditions treated before applying for admission to the training program.

POSTTRAINING DENTAL BENEFITS

The method proposed by H.R. 2967 for satisfying the government's responsibility for training-connected dental injuries and diseases seems reasonable and practicable. Section 3(2) iii of H.R. 2967 would establish the posttraining entitlement for health services. The dental care authorized would be limited essentially to the treatment of oral injuries and diseases directly caused by training duty. The posttraining dental benefits, therefore, are substantially the same as the dental care entitlement provided under the Federal Employees Compensation Act. The Association is in accord with the system proposed within the reserve plan legislation for the posttraining dental care of trainees.

FUTURE ENROLLMENT IN DENTAL SCHOOLS

The American Dental Association is concerned with the effect of the proposed reserve obligations of ex-trainees who will be engaged in predental and dental study. There is implicit in the proposed reserve plan the possibility that ex-trainees engaged in predental and dental training may have their courses of training interrupted. The Association believes that those engaged in predental and dental study should be permitted to continue their courses of study until graduation or withdrawal. In order to assure that result, the Association recommends that Congress establish, at the inception of the program, a firm policy for protecting the source of future dentists, physicians, and other scientific personnel. The Association suggests that a plan be devised to enable ex-trainees engaged in essential study to apply for and receive a postponement of their liability for recall to active duty. The nine and one-half year period of reserve liability should neither be shortened nor lengthened; it should merely be postponed until graduation or withdrawal from the essential course of study. The plan suggested would

be consistent with the policy now in effect under Selective Service for deferring students engaged in necessary study. The Selective Service policy serves to keep a steady flow of qualified persons into professions such as dentistry and medicine, which are so essential to the national interest.

SUMMARY

The American Dental Association submits the following recommendations for the consideration of this committee and Congress in its deliberations on H.R. 2967, the proposed "National Reserve Plan":

1. that dental care for members of the National Security Training Corps be limited to emergency treatment of injuries, acute oral infections, or other painful dental conditions;
2. that dental standards be established for admission to the National Security Training Corps at a level which will provide the number of volunteers required, but which will exclude individuals who might require extensive mouth rehabilitation;
3. that posttraining dental benefits for trainees discharged from the six-month period of active duty be in accordance with the system proposed in H.R. 2967, namely, the treatment of dental injuries and diseases directly caused by training duty; and
4. that ex-trainees engaged in predental and dental study be permitted to apply for and receive a postponement of their liability for recall to active duty until graduation or withdrawal from the course of dental study.

I wish to thank this committee, in behalf of the American Dental Association, for the opportunity of presenting the Association's views on the dental aspects of H.R. 2967. I request that this statement be made part of the printed record of this committee's deliberations on the "National Reserve Plan."

ASSOCIATION TESTIMONY BEFORE THE SUBCOMMITTEE ON HOSPITALS OF THE VETERANS' AFFAIRS COMMITTEE OF THE HOUSE OF REPRESENTATIVES ON H.R. 4481 TO CLARIFY ENTITLEMENT FOR VETERANS' OUTPATIENT DENTAL CARE

With the enactment of the Independent Offices' appropriations for fiscal year 1954, Congress placed limitations upon entitlement for Veterans Administration outpatient dental care. For fiscal year 1955, Congress continued the limitations. The President has recommended that the provisos in the 1955 outpatient care appropriations for the Veterans Administration, which establish the limitations, be extended. The limitations on dental outpatient entitlement, now in effect, eliminate from eligibility most veterans with dental disabilities of less than 10 per cent who did not or do not apply for treatment within one year of discharge or by December 31, 1954. In addition, the Administrator of Veterans' Affairs has issued regulations within Circular Number 2, initiated in October of 1953, to limit most veterans to one episode of outpatient dental treatment. I shall summarize the present system for providing outpatient dental care.

VETERANS ENTITLED TO OUTPATIENT DENTAL CARE

Veterans with Service-Connected Compensable Dental Conditions • Those in this category are entitled to dental examinations and whatever dental treatment is reasonably necessary for the amelioration of the service-incurred compensable condition. Veterans in this category may apply for dental examination and treatment of their service-incurred compensable conditions at any time and are entitled to recurring episodes of treatment.

Veterans with Service-Connected Noncompensable Dental Conditions Resulting from Combat Wounds or Service Trauma • Those in this category are entitled to dental examinations and whatever treatment is indicated for the amelioration of the service-incurred condition. Veterans in this category are entitled to recurring episodes of treatment, but they must file their initial applications for treatment within one year of discharge or before December 31, 1954, whichever is later.

Veterans with Service-Connected Noncompensable Dental Conditions Who Were Prisoners of War • Those in this category are entitled to dental examinations and whatever treatment is reasonably necessary for the amelioration of the service-incurred condition. Veterans in this category are also entitled to recurring episodes of treatment, but they also must file their initial applications for treatment within one year of discharge or before December 31, 1954, whichever is later.

Veterans with Dental Conditions Aggravating a Service-Connected Medical Condition • Those in this category are entitled to dental examinations and the dental treatment necessary to relieve the dental condition professionally determined to be aggravating an associated service-connected disorder. The dental condition itself need not be service-connected. The limitations upon recurring episodes of treatment and the time for filing applications are not applicable to veterans in this category.

Veterans Pursuing a Course of Training Under Veterans Administration Auspices • Those in this category are entitled to dental examinations and the treatment necessary to prevent interruption of their training. The conditions need not be service-connected. Veterans in this category are entitled to recurring episodes of treatment and may apply for treatment at any time during their period of training.

Veterans of the Spanish-American War, the Philippine Insurrection, or the Boxer Rebellion • Veterans in this category are entitled to dental examinations and whatever dental treatment is reasonably necessary to the amelioration of their dental conditions. Public Law 791, 81st Congress, declares that the dental conditions of veterans in this category are conclusively presumed to be service-connected. The limitations on recurring episodes of treatment and the time for filing applications are not applicable to veterans in this category.

All Other Veterans with Service-Connected Dental Conditions • Veterans in this category are entitled to dental examinations and the dental treatment indicated as reasonably necessary for the correction of their service-connected dental conditions. Veterans in this category must apply within one year of discharge or before December 31, 1954, whichever is later. They are entitled to only one episode of treatment unless the dental services rendered on a one-time basis are found unacceptable within the limitation of good professional standards.

The veterans listed in the preceding categories are, of course, those identified as wartime veterans. The President, early this year, issued a directive which declares that military service after January 31, 1955 shall be considered peacetime service. That directive will, to some extent, further limit the outpatient dental care provided by the Veterans Administration. The Association construes the President's order to limit entitlement for outpatient dental care of peacetime veterans to dental defects and injuries which are disabling and compensable. The Association has not as yet received a copy of the Veterans Administration circular defining the new limitations.

THE AMERICAN DENTAL ASSOCIATION'S POSITION

The American Dental Association believes that the existing combined Congressional and administrative limitations upon entitlement for Veterans Administration outpatient dental care are sound. The program as presently administered offers to all veterans a fair adjustment of their service-connected dental conditions and conforms the federal government's obligation to the veteran to a philosophically sound basis. In addition, the present eligibility requirements for outpatient dental care have established an attainable mission for the Veterans Administration Dental Service.

The House of Delegates of the American Dental Association, at its 1953 and 1954 annual sessions, expressed its position clearly on the scope of Veterans Administration outpatient dental care. In substance, those policies recommend that veterans, to be eligible for outpatient dental care, be required to apply within one year of discharge, that they receive the dental care necessary to correct their service-connected dental conditions, and that they receive whatever dental care is authorized on a one-time completion basis. The Association's policies make exceptions for the categories of veterans presently entitled to make later application and for those entitled to receive continuing episodes of dental treatment. The American Dental Association, therefore, is in substantial accord with the present system for providing outpatient dental care to eligible veterans.

The proposal before this committee, H.R. 4481, would, in the opinion of the American Dental Association, revive the difficulties and problems which faced the Veterans Administration and Congress before the institution of the existing limitations. Before the enactment of the 1954 appropriations for the Veterans Administration, that agency could not maintain its dental outpatient program on a current basis. Each year the backlog of applications and authorizations for dental outpatient care increased. Congress, moreover, refused to appropriate the necessary funds to maintain the program on a current basis. H.R. 4481 would, in effect, remove the limitation on continuing episodes of dental treatment for most veterans and would restore the application of the so-called "tooth-entity" theory for determining service-connected dental conditions. Under that theory a veteran who makes application

within the applicable period after discharge will receive continuing care of a service-connected tooth regardless of when or how a diseased condition of that tooth occurred; will receive a replacement for that tooth if and when that becomes necessary; and will receive a replacement for or treatment of nonservice-connected teeth if professional judgment indicates that the maintenance of a service-connected tooth or its replacement cannot otherwise be adequately provided.

The American Dental Association disagrees with the Veterans Administration's former concept of a service-connected dental condition. That any specific member of the human anatomy which has been infected or injured during military service must, thereafter, be treated and maintained at federal expense when later unrelated defects occur is patently an unreasonable extension of the federal government's obligation to the veteran. The Veterans Administration should provide to the eligible veteran the treatment necessary to correct any uncorrected dental disease or injury incurred in service or as a result of service. After correction of his service-incurred dental diseases or injuries, the eligible veteran should be no longer entitled to the dental services provided by the Veterans Administration.

The proposal before this committee would also extend the period during which most veterans must apply for outpatient dental care from one year after discharge to two years after discharge or after December 31, 1955. H.R. 4481 would also eliminate from the limiting period for applications veterans with combat or service trauma dental conditions and veterans who were former prisoners of war. The American Dental Association does make exceptions from its policy recommendation that veterans apply within one year of discharge to sustain their entitlement for outpatient dental care. The Association would support the inclusion of veterans with combat and traumatic dental conditions and veterans who were prisoners of war within the exceptional categories. The Association does not believe, however, that there is need to expand the application period for the group of veterans who incurred or will incur routine dental defects during active service. The Association's House of Delegates, at its 1954 annual session, recommended that the present one-year limitation on the time for applying for dental outpatient care be supported. Specifically, the Association recommended that the provisions contained in H.R. 9866, 83rd Congress, the so-called "Frelinghuysen" bill, be supported. That bill, as you will recall, passed the House of Representatives, but failed to achieve the approval of the Senate during the last Congress. The provision in H.R. 9866 requiring veterans to apply for outpatient dental care within one year of discharge is, in the Association's opinion, completely fair to veterans. The necessity for including a limiting period on applications stems from the well known fact that dental disease tends to spread if left unchecked. A simple cavity, if neglected this year, may well result in the loss of an affected tooth a year or two from now. The Association believes that Congress should have as its chief concern the establishment of a dental program for veterans that is completely sound from a professional and scientific viewpoint.

Mr. Frelinghuysen, a former member of the Veterans' Affairs Committee, has again introduced his proposal for clarifying entitlement for outpatient dental care. That bill is H.R. 1793, 84th Congress. In substance, H.R. 1793 would incorporate within the basic law governing the Veterans Administration dental program the limitations carried on from year to year within the appropriations legislation and those issued within the regulations of the Administrator. The American Dental Association urges this committee to consider H.R. 1793 and take favorable action upon it. The Association is not in favor of the provisions within H.R. 4481 which would extend the period for making application for outpatient dental care and opposes firmly the reinstitution of continuing treatment episodes which would be authorized by H.R. 4481. In behalf of the American Dental Association, I wish to thank this committee for the opportunity to appear and present the Association's viewpoints on this important legislation.

BUREAU OF ECONOMIC RESEARCH AND STATISTICS

Survey of recent dental graduates
II. Amount and type of equipment purchased; rate of practice development

Of the dentists who graduated during the period 1951 through 1954, 42.3 per cent had purchased two or more dental chairs by the time the questionnaire was circulated in November 1954 (Table 7). It is safe to assume that the percentage was considerably smaller among 1954 graduates and considerably larger among the 1951 graduates. In the 1953 Survey of Dental Practice, 58.1 per cent of all independent dentists reported having more than one chair.

Fewer of the respondents had purchased more than one dental unit (37.1 per cent) than had purchased more than one dental chair (42.3 per cent). Some dentists have a chair without a unit, which is used for such services as examinations, roentgenograms, emergency extractions and orthodontic treatments.

Purchase of gas machines was reported by fewer of the recent graduates (9.5 per cent) than any other item of equipment. A recent addition in dental equipment, the operating stool, has gained substantial popularity, having been purchased by 71.4 per cent of the respondents. A surprisingly high percentage (92.6 per cent) of the graduates of the last four years had purchased x-ray machines.

Dentists who did not purchase such essential items as dental chairs and dental units were mainly dentists who rented their equipment and dentists whose equipment had been given to them.

Table 8 presents the mean number of items of each type of equipment purchased per dentist. These figures may be used as a basis for estimating total purchases of equipment by any given number of dentists establishing practices.

The percentages of dentists, by city-size categories, who purchased more

Table 7 • Percentage distribution of dentists by number of specified items of equipment purchased

Item	Number purchased					Total
	0	1	2	3	4 or more	
Dental chairs	3.7	54.0	37.2	4.3	.8	100.0
Dental units	4.4	58.5	33.2	3.3	.6	100.0
Cabinets	4.9	60.1	31.2	2.9	.9	100.0
Sterilizers	8.0	81.2	9.5	1.1	.2	100.0
Compressors	19.1	79.0	1.8	.1	.0	100.0
Operating lights	3.5	59.0	33.4	3.4	.7	100.0
Dental ceiling lights	55.4	31.2	11.7	1.1	.6	100.0
X-ray machines	7.4	87.8	4.6	.2	.0	100.0
Gas machines	90.5	9.3	.2	.0	.0	100.0
Operating stools	28.6	60.0	10.7	.5	.2	100.0
Developing tanks	15.2	83.5	1.3	.0	.0	100.0
Casting machines	30.3	68.8	.9	.0	.0	100.0
Inlay ovens	32.5	66.6	.9	.0	.0	100.0
Lathes	16.5	81.7	1.7	.1	.0	100.0

The first article in this series appeared in The Journal for April 1955.

Table 8 • Mean number of items of equipment purchased per dentist

Item	Mean
Dental chairs	1.45
Dental units	1.37
Cabinets	1.35
Sterilizers	1.05
Compressors	.83
Operating lights	1.39
Dental ceiling lights	.60
X-ray machines	.98
Gas machines	.10
Operating stools	.84
Developing tanks	.86
Casting machines	.71
Inlay ovens	.69
Lathes	.86

Table 9 • Percentage of dentists buying two or more of specified items of equipment, by size of city

Item	Size of city				
	Under 2,500	2,500-25,000	25,000-100,000	100,000-1,000,000	Over 1,000,000
Dental chairs	46.3	49.3	38.4	41.1	19.6
Dental units	40.0	43.9	32.9	35.8	18.0
Cabinets	37.7	38.8	32.9	35.2	19.6
Sterilizers	12.3	13.2	9.4	9.5	6.7
Operating lights	40.8	43.8	33.9	36.2	17.5
Dental ceiling lights	13.1	15.4	12.2	13.2	7.2
X-ray machines	5.8	5.7	4.1	4.4	3.6
Operating stools	8.8	12.0	12.5	12.8	4.1

than one of various items of equipment are shown in Table 9. The proportion of dentists purchasing two or more items of equipment was only about half as high in cities of over 1,000,000 population as it was in smaller cities. The largest proportion of dentists purchasing more than one of each item was in cities of 2,500 to 25,000 population, followed closely by the "under 2,500" category. The high percentage of dentists in the smallest city-size category who purchased more than one of each item of equipment is rather surprising in view of the fact that this category includes very small villages with a definitely limited potential of patients.

The distribution of dentists who purchased the various items of equipment according to whether it was new or used, and if used, whether it was purchased from a dentist or another source, is shown in Table 10. When more than one item of equipment was purchased, it was a common practice to buy a combination of new and used equipment.

The estimated percentage of each item of equipment that was purchased new or used is shown in Table 11. These estimates were based on data in Table 10. Approximately two thirds (66.1 per cent) of the dental chairs and three fourths (76.1 per cent) of the dental units were purchased new. A higher percentage of the operating stools was new (82.8 per cent) than of any other item of equipment listed. At the other extreme were gas machines, of which almost half (47.2 per cent) were second-hand.

Roughly four fifths of all second-hand equipment was purchased from other

Table 10 • Percentage distribution of dentists according to whether items of equipment purchased were new or used, and source of used equipment

Item	All new	All used, from other dentist	All used, from other source	Combinations of new and used equipment	All used, from dentists and other sources	Total
Dental chairs	59.3	14.7	5.7	19.6	.7	100.0
Dental units	65.7	14.2	3.8	15.7	.6	100.0
Cabinets	65.6	16.5	5.1	12.1	.7	100.0
Sterilizers	73.3	16.6	4.7	5.0	.4	100.0
Compressors	74.3	17.9	5.9	1.8	.1	100.0
Operating lights	73.3	12.0	2.9	11.4	.4	100.0
Dental ceiling lights	70.7	21.0	4.7	3.4	.2	100.0
X-ray machines	79.0	15.7	2.6	2.6	.1	100.0
Gas machines	53.2	35.9	10.5	.4	.0	100.0
Operating stools	80.4	13.3	3.2	3.0	.1	100.0
Developing tanks	77.5	17.3	4.1	1.1	.0	100.0
Casting machines	70.4	22.5	6.1	.9	.1	100.0
Inlay ovens	75.4	18.7	5.0	.8	.1	100.0
Lathes	72.4	21.0	5.5	1.0	.1	100.0

Table 11 • Estimated percentage of items of dental equipment purchased new and used

Item	Per cent new	Per cent used, from other dentist	Per cent used, from other source	Total
Dental chairs	66.1	26.1	7.8	100.0
Dental units	76.1	19.6	4.3	100.0
Cabinets	73.2	21.4	5.4	100.0
Sterilizers	76.3	18.8	4.9	100.0
Compressors	75.3	18.7	6.0	100.0
Operating lights	81.5	15.7	2.8	100.0
Dental ceiling lights	73.0	22.8	4.2	100.0
X-ray machines	80.8	16.6	2.6	100.0
Gas machines	52.8	36.9	10.3	100.0
Operating stools	82.8	14.2	3.0	100.0
Developing tanks	78.2	17.6	4.2	100.0
Casting machines	70.8	23.1	6.1	100.0
Inlay ovens	75.8	19.2	5.0	100.0
Lathes	72.6	21.9	5.5	100.0

dentists, the remainder being purchased mainly from dental dealers.

Tables 12 and 13 show the rate of development of dental practices in terms of number of hours per day at the chair for specified lengths of time since the practice was established. There was evidence that some dentists recorded the number of hours in the office rather than the number of hours at the chair. Thus, the figures in these tables are believed to be biased upward. The proportion making this error, however, is probably about equal in the various regions and city sizes, so comparisons between these groups are not invalidated.

After one month in the office, the mean number of chairside hours per day was 5.2. After 12 months in the office the average dentist reported spending 7.5 hours per day at the chair. Only about 20 minutes was added to this average during the second year of dental practice.

Regionally, dental practices one month old were busiest in the Far West (6.3 hours per day) and least busy in the Middle East (4.2 hours). There was little regional variation in number of hours after 24 months. An unexpected result was that the averages reported after 24 months in the New England, Middle East and Central regions, all of which are relatively well supplied with dentists, were slightly higher than in other regions. Possibly the figures reflect general

Table 12 • Mean number of hours per day at the chair, by number of months since practice was established and by region

Region	Number of months since practice was established						
	1	3	6	9	12	18	24
New England	4.7	5.9	6.5	7.0	7.4	7.7	8.0
Middle East	4.2	5.4	6.1	6.8	7.2	7.7	7.9
Southeast	5.2	6.1	6.8	7.2	7.5	7.6	7.8
Southwest	4.8	5.7	6.3	7.0	7.3	7.4	7.6
Central	5.3	6.3	6.9	7.3	7.6	7.8	7.9
Northwest	6.0	6.9	7.3	7.6	7.7	7.7	7.8
Far West	6.3	7.0	7.4	7.6	7.7	7.7	7.7
United States	5.2	6.2	6.8	7.2	7.5	7.7	7.8

Table 13 • Mean number of hours per day at the chair, by number of months since practice was established and by size of city

Size of city	Number of months since practice was established						
	1	3	6	9	12	18	24
Under 2,500	6.2	7.0	7.2	7.4	7.5	7.7	7.8
2,500-25,000	5.6	6.5	7.1	7.5	7.7	7.9	8.0
25,000-100,000	4.9	5.9	6.6	7.1	7.3	7.7	7.8
100,000-1,000,000	4.9	5.9	6.6	7.1	7.4	7.5	7.7
Over 1,000,000	4.2	5.2	6.1	6.6	7.1	7.5	7.7
United States	5.2	6.2	6.8	7.2	7.5	7.7	7.8

regional differences in length of work day.

Among dental practices that had been established for only a month or two, those in the smallest towns were the busiest (Table 13). After one month, dentists in places of less than 2,500 population were spending two hours more per day at the chair than dentists in cities of over 1,000,000 population. After 24 months, however, there was little difference in number of hours per day at the chair. Dentists in cities of 2,500 to 25,000 population held a slight advantage over dentists in larger and smaller places.

The report of this survey will be concluded in a subsequent issue of THE JOURNAL.

B. Duane Moen, Director

BUREAU OF PUBLIC INFORMATION

Nation's oldest newspaper scores antifluoridation leaders as "preying on public fears"

The nature of the opposition to the fluoridation of public water supplies was sharply pointed up in a recent editorial in the Hartford (Conn.) *Courant,* the country's oldest newspaper. In an editorial entitled "Fluoridation Attracts a Collection of Quacks," the *Courant* described ringleaders against the public health measure as "one of the greatest aggregations of quacks and medical phonies of history" who are "cashing in on the American weakness for accepting any self-styled expert at face value." The full text of the editorial follows:

One of the greatest aggregations of quacks and medical phonies of history is now lined up in opposition to the fluoridation of drinking water. Cashing in on the American weakness for accepting any self-styled expert at face value, these quacks, at home and abroad, are preying on natural fears. Two of the dozen or more who are playing on the anti-fluoridation team that have been constantly cited here are Charles Eliot Perkins and Dr. Royal Lee. The American Dental Association has performed a public service by preparing dossiers on these two rare birds, along with a dozen others who pretend medical knowledge and experience.

Charles Eliot Perkins has written two books on cancer. Yet it is impossible to find any trace of medical or scientific training in his background. In 1946 Mr. Perkins was press agent for a Washington hotel. Of him Dr. Thomas L. Hagan, chief of the Division of Dental Public Health, says: "We have been unable to locate any contributions Mr. Perkins has made to reputable cancer journals. . . . He states he is a biochemist and a physiologist, yet we have likewise been unable to locate any contributions he has made to the professional journals. He is not listed in "American Men of Science." . . . He uses no degree after his name, and as far as is known has done no research.

Dr. Royal Lee, head of the so-called Lee Foundation for Nutritional Research, has published a number of booklets against fluoridation. Dr. Lee has been long known to the Federal Food and Drug Administration. As far back as in August, 1940, he was cited for misbranding

of "Catalyn," which contained no detectable quantities of vitamins B and G as Lee claimed it did. In 1942 he was permanently restrained from shipping his stuff in interstate commerce. In 1945 again the Federal Trade Commission reported a cease and desist order for "misleading representations" in the advertising of his products. *The Journal of the American Dental Association* in 1952 reported that Lee was found guilty and fined $800 for misbranding a product claimed to be effective in 41 disease conditions including "weakness in hot weather," "sensitivity to bright light," "falling hair," "brittle nails," and "restless sleep."

The records of the other front-rank battlers against fluoridation are just as malodorous. It is well established that in the field of nutritional intake there are many quacks who prey on the foibles of the hypochondriac. Their tricks may run from the simple ingestion of blackstrap molasses, to involved formulae supposed to have semi-magical qualities. Those earnest citizens who are seriously concerned with their internal workings are natural victims of these harpies who make their living by false scientific pretensions.

One might say that these scientific charlatans also have a "sensitivity to bright light," for the more light there is shed on fluoridation, the more it becomes evident the medical quacks and phonies have found it a lucrative field in which to operate.

Association comments on Sokolsky article on fluoridation

The following letter was sent on behalf of the Association to the syndicated columnist, George E. Sokolsky, who attacked fluoridation as "this business of pouring another poison into our water":

On behalf of the American Dental Association, I would like to comment on your recent attack on the fluoridation of community water supplies. The chief reason for this comment is that your article, purposelessly in my view, seeks to destroy public confidence in a scientifically established health measure.

Your right to discuss any matter in any way in your articles is, of course, recognized but it is believed that this right should not be exercised without serious consideration when it may produce a substantial disservice to the public. In such consideration, I wish to draw your attention to the following items:

1. In scientific matters, unsubstantiated opinions and assertions do not have sufficient authority to overturn facts. The facts relating to the fluoridation of water supplies are available in a voluminous, scientific literature coming from many sources the world over. These facts flatly contravene your statement that fluoride as used in water fluoridation is a "poison." I am sure you will agree that in a matter involving individual and public health your readers are entitled to facts when they are available.

2. In evaluating scientific facts, I am sure you will agree that the scientific professions have competence. Every major health group concerned with the effects of fluoridation has evaluated the evidence on fluoridation and has endorsed, approved and recommended the measure. Surely it is inconceivable that all of these agencies and professions have combined to recommend a questionable or dangerous procedure.

3. Millions of Americans have been drinking naturally fluoridated water for many years and where the concentration is that recommended in a fluoridation program, there is no evidence whatever of toxicity.

4. The safety and efficiency of the fluoridation process cannot be determined by debate, any more than the chemical composition of salt can be determined by debate. It is a disservice, therefore, to stimulate such unproductive debate at the cost of delaying a health measure which can bring real benefits to the children of a community.

The Association believes that it is something short of the highest type of public service

when unsubstantiated charges against a public health measure are presented without, at least, some indication that an overwhelming mass of evidence from recognized scientific sources exists to refute these charges. The Association also believes a full and honest discussion can do nothing but advance the cause of fluoridation with resultant beneficial effects on the health of the people.

Herbert B. Bain, Director
Bureau of Public Information

MR. SOKOLSKY REPLIES

In reply the following letter dated March 26 was received from Mr. Sokolsky:

I have your letter of February 25 in which you take me to task for an article I wrote concerning fluoridation.

You do not answer my article at all. You simply tell me that the scientific professions have competence. They have a certain degree of competence but not exclusive competence. We have not yet reached that state in America when we are forced to conform to the opinion or the doctrines of any group.

You make no distinction between naturally fluoridated water and the fluoridation program by infiltrating pure water with this particular poison in small quantities. I have inquired of members of your association as well as physicians outside of it. I find a vast difference of opinion. I find that as many of those whom I interviewed who are members of your association are opposed to the process as favor it. I also find that they live in terror of being quoted. They tell me that they may be brought up on charges should I quote their names. I regard such intimidation of any citizen for whatever reason as unAmerican. I should like to see a Congressional Committee investigate this whole subject.

George E. Sokolsky

COUNCIL ON DENTAL THERAPEUTICS

Council announces classification of additional products

The classification of products by the Council on Dental Therapeutics has been described in a previous report (J.A.D.A. 40:489 April 1950). The Council's program now provides for classification of products in Group A, Group B, Group C and Group D. Products are reconsidered periodically, and decisions are subject to change at any time that a substantial amount of new evidence becomes available. The files of the Council contain information on many drugs and dental cosmetics, and inquiries are welcome.

GROUP A

Listing of products in Group A means that at the time of their consideration, the items conformed with the provisions for acceptance established by the Council on Dental Therapeutics and adopted by the Board of Trustees and the House of Delegates of the American Dental Association. Items in this group will be listed in *Accepted Dental Remedies* and may use the Seal of Acceptance, unless otherwise provided.

The following additional products are classified in Group A:

Benzalkonium Chloride, U.S.P. (See A.D.R. ed. 20, p. 85)

Specific Germicidal Solution (Specific Chemicals, Inc.): Benzalkonium chloride, 0.5 per cent; sodium nitrite, 0.5 per cent, and water.

Benzathine Penicillin G (See J.A.D.A. 49: 714 Dec. 1954)

Permapen (brand of benzathine penicillin G) Oral Suspension (Chas. Pfizer & Company, Inc.): Each 5 cc. is stated to contain benzathine penicillin G, 300,000 units, sodium citrate, 2.38 per cent; propylparaben, 0.016 per cent; methylparaben, 0.09 per cent; suspending agents, color and flavor. In bottles, 2 fluid ounces.

Procaine HCl, U.S.P. (See A.D.R. ed. 20, p. 25), **Epinephrine, U.S.P.** (See A.D.R. ed. 20, p. 92)

Procaine HCl 2%, Epinephrine 1:25,000 (Graham Chemical Corporation): (See A.D.R. ed. 20, p. 29) Manufactured for the following distributors:

American Dental Mfg. & Supply
Ascher Dental Supply Company
Pfingst & Company
Philadelphia Dental Supply Company
D. L. Saslow & Company

Procaine HCl 2%, Epinephrine 1:50,000 (Graham Chemical Corporation): (See A.D.R. ed. 20, p. 29) Manufactured for the following distributors:

American Dental Mfg. & Supply
Ascher Dental Supply Company
Pfingst & Company
Philadelphia Dental Supply Company
D. L. Saslow & Company

Procaine HCl, U.S.P. (See A.D.R. ed. 20, p. 25), **Phenylephrine HCl, U.S.P.** (See A.D.R. ed. 20, p. 94)

Procaine HCl 2%, Phenylephrine HCl 1:2,500 (Graham Chemical Corporation): (See A.D.R. ed. 20, p. 29) Manufactured for the following distributor:

Pfingst & Company

Procaine HCl 4%, Phenylephrine HCl 1:2,500 (Graham Chemical Corporation): (See A.D.R. ed. 20, p. 29) Manufactured for the following distributors:

Ascher Dental Supply Company
Ethical Dental Supply Company
Pfingst & Company
Philadelphia Dental Supply Company
D. L. Saslow & Company

Procaine HCl, U.S.P. (See A.D.R. ed. 20, p. 25), **Tetracaine HCl, U.S.P.** (See A.D.R. ed. 20, p. 35), **Phenylephrine HCl, U.S.P.** (See A.D.R. ed. 20, p. 94)

Procaine HCl 2%, Tetracaine HCl 0.15%, Phenylephrine HCl 1:2,500 (Graham Chemical Corporation): See A.D.R. ed. 20, p. 30) Manufactured for the following distributors:

Ascher Dental Supply Company
Ethical Dental Supply Company
Pfingst & Company
Philadelphia Dental Supply Company
D. L. Saslow & Company

GROUP B

Listing of products in Group B means that there is insufficient evidence to justify their present acceptance, but there is reasonable evidence of their usefulness and safety. These products meet the other qualifications and standards established by the Council on Dental Therapeutics. It is the Council's opinion that Group B products may be promoted for special use and study.

The Council's initial consideration of products which may be eligible for Group B listing is influenced favorably by the knowledge of further investigations then in progress. It is the policy of the Council to reconsider Group B products each year on the basis of new evidence which may be produced in their support. Classification in this category is not ordinarily continued for more than three years.

GROUP C

Listing of products in Group C means that the evidence is so limited or inconclusive that the products cannot be accurately evaluated. It is the Council's opinion that Group C products require further study by qualified investigators.

GROUP D

Listing of products in Group D means that they are unacceptable because of their demonstrated inability to meet the standards outlined in the provisions for acceptance.

COUNCIL ON DENTAL EDUCATION

Additional hospital dental internships and residencies approved by the Council on Dental Education (supplement 3)

The Council on Dental Education and its Committee on Internships and Residencies announced in February 1955 the approval of additional educational programs in hospitals. Previous listings of approved internships and residencies appeared in the May 1954, August 1954 and February 1955 issues of THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION. Since changes in the status of approved programs and notice of additional programs approved are published periodically in THE JOURNAL, it is important that the applicants review all of the references cited above when seeking complete and current information.

A number of approved internships and residencies listed by the Council are conducted in Army, Navy, United States Public Health Service and Veterans Administration hospitals. An applicant for a position as an intern or resident in any of these hospitals must be a citizen of the United States. In order to be eligible for a dental internship in an Army hospital, the applicant must also be completing his senior year of dental school or have completed his dental education within a period not exceeding 12 months prior to the date of commencement of the internship. An applicant for Navy internship must be completing his senior year of dental school and must agree to accept a superseding appointment as lieutenant junior grade in the regular Navy Dental Corps. Residencies conducted by the Navy are open only to regular dental officers of the U. S. Navy. Inquiries and applications for appointment as an intern or resident in one of the service hospitals must be addressed as follows:

Army:
Internship:
Office of the Surgeon General
Department of the Army
Washington 25, D.C.
Attention: Personnel Division
Residency:
Through regular military channels

Navy:
Internship:
District Dental Office, nearest Naval District Headquarters, or
Chief of the Dental Division
Bureau of Medicine and Surgery
Department of the Navy
Washington 25, D. C.
Residency:
Through regular military channels

U. S. Public Health Service:
The Surgeon General
Public Health Service
U. S. Department of Health, Education and Welfare
Washington 25, D.C.
Attention: Chief, Dental Branch, Division of Hospitals

Veterans Administration:
Manager of the hospital conducting the program in which you are interested

All of the internships and residencies that have been approved or provisionally approved are recognized by the Council on Dental Education as accredited. The training programs in the following list designated with a double asterisk (**) are provisionally approved; all others are approved.

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
DELAWARE				
The Delaware Hospital, Inc. 501 West 14th Street Wilmington 1, Delaware Dr. T. Edwin Hinkson, Chief of Dental Service	Residency Oral surgery	12	1	July
ILLINOIS				
Veterans Administration Hospital Hines, Illinois Dr. H. L. Dute, Chief of Dental Service	Internship Rotating	12	1	July
INDIANA				
Indiana University Medical Center 1100 West Michigan Street Indianapolis 2, Indiana	Internship Oral surgery	12	1	July
	Residency Oral surgery	12	1	July
MARYLAND				
National Naval Medical Center 8901 Wisconsin Avenue Bethesda 14, Maryland Capt. Curtiss W. Schantz, Chief of Dental Service	Residency Oral surgery	12	1	July
	Periodontics	12	1	July
MASSACHUSETTS				
Beth Israel Hospital 330 Brookline Avenue Boston 15, Massachusetts Dr. Henry M. Goldman, Chief of Dental Service	Residency** Periodontics	24	6	July
MICHIGAN				
Mount Carmel Mercy Hospital 6071 West Outer Drive Detroit 35, Michigan Dr. H. J. Bloom, Chief of Dental Service	Internship Oral surgery	12	1	July
	Residency Oral surgery	12	1	July
PENNSYLVANIA				
Albert Einstein Medical Center (Southern Division) 1429 South 5th Street Philadelphia 47, Pennsylvania Dr. Victor H. Frank, Chief of Dental Service	Internship Rotating	12	1	July
TEXAS				
City County Hospital (Parkland Hospital) Oak Lawn and Maple Avenues Dallas 4, Texas Dr. P. Earl Williams, Chief of Dental Service	Residency Oral surgery	12	1	July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
TEXAS (Continued)				
Wm. Beaumont Army Hospital Fort Bliss, Texas Lt. Col. W. A. Priebe, Chief of Dental Service	Internship Rotating	12	4	July
Brooke Army Hospital Brooke Army Medical Center Ft. Sam Houston, Texas Col. Clarence P. Canby, Chief of Dental Service	Residency Oral surgery Prosthodontics	24 24	1 1	July July
Veterans Administration Hospital 2002 Holcombe Boulevard Houston, Texas	Residency Oral surgery	24	2	July

The following change has been made in the list of approved internship and residency programs published in the May 1954 issue of THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION.

FLORIDA				
Florida State Hospital Chattahoochee, Florida Dr. John K. Cox, Chief of Dental Service	Internship Rotating	12	5	July

BUREAU OF LIBRARY AND INDEXING SERVICE

The American Dental Association Film Library

The films reviewed in this article have been added to the Film Library and are now available at a nominal rental fee of $2.50 to dental societies, study clubs, dental schools, hospital dental staffs, and armed services dental personnel. Since the number of prints of each title is necessarily limited, it is suggested that program chairmen plan their programs far enough in advance to insure availability.

FILM REVIEWS

Closed Mouth Impression Technic for Edentulous Patients • 16 mm., color, magnetic sound, 22 minutes. Produced in 1954 by Stuart J. Horner, D.D.S., and Dewey H. Bell, D.D.S., for the Medical College of Virginia School of Dentistry. Harold Syrop, D.D.S., dental audio-visual coordinator. Photography by Melvin Shaffer, department of visual education, Medical College of Virginia. Purchase from producer. Procurable on loan ($2.50) from the American Dental Association Film Library, 222 E. Superior St., Chicago.

The film opens with the narrators' statement that the closed mouth impression method has the advantage of developing peripheral borders under physiological and functional conditions that approximate normal dental functions. The technic shown is an interpretation of basic closed mouth procedure. A comprehensive examination of the edentulous mouth of the

patient has already been made. Models of the patient's mouth show that an alveolectomy had been performed earlier. Models and roentgenograms of the patient's mouth are studied and an explanation is given of the instruments to be used for the technic. The steps involved are then demonstrated.

Slightly oversized impression trays are used for making the preliminary impressions. Firm pressure is used to seat the tray, plaster casts are made and covered by tinfoil. Quick-setting acrylic resin is used for the final impression trays. The patient is instructed to close the mouth and swallow. Later the maxillary impression is tested for stability and retention. This is followed by selection of the shade of the teeth. The film concludes by showing the adjustment of the facebow for the recording of the maxillary relationships.

The film is well organized. The photography enables the viewer to see all the intraoral activity clearly. The use of models, roentgenograms and the patient increases its instructional value. This film is suitable for teaching purposes. Since the technics illustrated are not new, they may interest the student more than the practitioner.

The Importance of Teaching Gingival Massage • 16 mm., color, sound, 17 minutes. Produced in 1950 by Abram Cohen, D.D.S., Philadelphia. Purchase from the producer, 269 S. 19 St., Philadelphia. Procurable on loan ($2.50) from the American Dental Association Film Library, 222 E. Superior St., Chicago.

The film demonstrates the modified Stillman technic of gingival massage with innovations for the periodontal patient. The film opens by showing photographs of patients with various kinds of periodontal diseases. The type of brush to be used to stimulate the gums is shown and the technic is demonstrated on a plastic model and on a patient. The anatomy of the supporting structures is explained to the patient and he is shown how to brush the occlusal surfaces.

Some of the common errors of toothbrushing are demonstrated on models. After these demonstrations, the patient, in the presence of the operator, applies what he has learned and any incorrect procedures are noted. The operator explains that in some instances a row of bristles may have to be cut away to effect proper massage. On the patient's subsequent visit, he again demonstrates how he has been brushing his teeth since his last visit. Corrections are then made, and damage caused by mechanical abrasion mentioned. The film concludes by showing "before and after" photographs of patients with periodontal disease who have been practicing this technic.

This film is suitable for teaching. The repetition of instructions, the demonstration on the patient, models, and the use of diagrams, increase its instructional value. The intraoral photographs are clear. It should be interesting to general practitioners and periodontists for use in patient education. Dental study clubs and hospital dental staffs may also find it suitable for their programs.

COUNCIL ON DENTAL RESEARCH

Deletion from list of certified dental materials

The A.D.A. Research Fellowship, National Bureau of Standards, has been advised by the manufacturer of the material listed below that after April 30, 1955, this product is to be withdrawn from the market and, therefore, it should be eliminated from the List of Certified Dental Materials.

CERTIFIED DENTURE RESINS (A.D.A. SPECIFICATION NO. 12)
TYPE I, HEAT-CURING

Material	*Form*	*Manufacturer or distributor*
Q.E.D.	Pink; powder-liquid	H. D. Justi & Son, Inc.

COUNCIL ON DENTAL RESEARCH

Ultrasonics in dentistry

Vibrational waves having a frequency greater than that detectable by the normal human ear are referred to as ultrasonic vibrations. Therefore, the term ultrasonic applies to those waves with a frequency greater than approximately 15,000 cycles per second. There are a number of methods of generating such high frequency vibrational waves. The commonest and simplest methods employ magnetostriction or crystal transducers; magnetostriction for frequencies usually below 100,000 cycles per second and the crystals for higher frequencies. Ultrasonic generators based on the magnetostriction principle are the basis of the ultrasonic dental handpieces currently being applied to the excavation of cavities in human teeth.

The magnetostriction generators transform alternating electrical current into sound vibrations. This transformation may be produced if a nickel or nickel alloy (or other ferromagnetic material) rod or tube is mounted in an alternating magnetic field parallel to the long axis of the rod or tube. As the field changes, the tube or rod will be changed in length periodically. These alternating changes in the length of the rod cause it to vibrate longitudinally at a frequency that depends upon the frequency of the alternating magnetic field and several other factors.

In the ultrasonic dental handpiece, suitably shaped tips are mounted on the end of the vibrating nickel rod and an abrasive slurry, such as water and alumina, is fed on the tooth in contact with the vibrating tip of the handpiece. A cavity that closely approximates the shape and size of the tip can be made in a tooth. Currently dental handpieces employ frequencies ranging from 25,000 to 30,000 cycles per second and have a longitudinal stroke of between 0.0004 and 0.0014 inch. What may happen is that some of the abrasive particles in the slurry are rubbed or thrown against the hard tooth tissues by the rapidly vibrating instrument and, at contacts of the abrasive particles against enamel or dentin, minute amounts of calcified tissues are removed. Of course, the working tip of the instrument is also abraded. This principle has been used for some time industrially to cut hard brittle substances in an intricate manner without fracturing them.

REVIEW OF LITERATURE

Since the application of ultrasonic vibration in cutting hard tooth tissues is comparatively recent, there are few references in the dental literature to its use.

Nielsen reported on his work with Richards on the development of an ultrasonic dental cutting instrument at the March 1954 meeting of the International Association for Dental Research. An abstract of this report was published in October 1954.[1] The complete report was published later.[2] They constructed an ultrasonic handpiece and prepared experimental cavities in extracted teeth and in the teeth of dogs. They believed the method would be a useful tool in operative dentistry but that more testing and research were necessary.

1. Nielsen, A. G., and Richards, J. Application of ultrasonics to the cutting of teeth. (Abst.) J. D. Res. 33:698 Oct. 1954.

2. Nielsen, Arne G.; Richards, James R., and Wolcott, Robert B. Ultrasonic dental cutting instruments: I. J.A.D.A. 50:392 April 1955.

Oman and Applebaum[3] stated that in November 1952, cavities were first prepared in extracted teeth with the Cavitron ultrasonic machine used in industry and that a year later they used a special handpiece constructed by the Cavitron Equipment Corporation to prepare cavities in extracted teeth, in the teeth of one dog and one chimpanzee and on four patients. No adverse gross clinical symptoms were encountered. Histological examination of the animal teeth is awaiting the completion of the celloidin embedding technic. While Oman and Applebaum stressed the experimental nature of this preliminary report, they felt that the application of ultrasonics in dentistry provided a valuable operative tool.

In addition to the foregoing references, accounts of the cutting of cavities in extracted teeth, using available industrial machines, were announced.[4, 5]

At the ninety-fifth annual session of the American Dental Association reports on the use of ultrasonics in cavity preparation were presented by Nielsen[6] and by Oman.[7] Nielsen gave data on the effect of time in use, force exerted on the instrument and the character of the abrasive slurry on the cutting rates of the instrument in various dental materials and tooth enamel and dentin. He stressed the erratic behavior of his particular instrument, demonstrated that the slurry was necessary as a coolant as well as an abrasive, and pointed out that adequate data on the biologic effect were not available. Oman[7] reported that there were no subjective clinical symptoms in 40 patients, ranging in age from 12 to 70 years, who had had cavities prepared using the Cavitron instrument. He also described investigations under way on the effect of the ultrasonic drill on the pulps. Patient reaction was reported as being very favorable because of the absence of vibration, noise and heat and a great reduction of pain in all cases, and its absence in most. Reports by Oman[8] and by Balamuth[9] given before the New York Academy of Dentistry present little additional information not contained in the earlier reports as listed in the bibliography.

At the thirty-third annual meeting of the International Association for Dental Research in March 1955, Hansen and Nielsen[10] reported on tissue responses to rotary and ultrasonic cutting procedures. These investigators used the continuously growing incisors of guinea pigs. They found that disturbances in enamel formation were more severe and more frequent in ultrasonic than in rotary methods.

Severe pulp changes and alterations in dentin formation were not present in the incisors where cavities were prepared with a rapidly rotating disk but were found in the teeth where cavities were cut with the ultrasonic handpiece.

PATENTS PERTAINING TO ULTRASONICS

A patent was issued to H. C. Hayes[11] on an impact device utilizing the magnetostriction principle in a tool that had dental implications. Bodine[12, 13] has two patents and a reissue[14] that may be of

3. Oman, Carl R., and Applebaum, Edmund. Ultrasonic cavity preparation. Preliminary report. N.Y. D. J. 20:256 June-July 1954.

4. Catuna, Matthew C. Sonic energy: a possible dental application. Ann. Den. 12:100 Sept. 1953.

5. The ultrasonic drill. Brit. D. J. 97:96 Aug. 17, 1954.

6. Nielsen, Arne G. Ultrasonic dental cutting instrument: II. J.A.D.A. 50:399 April 1955.

7. Oman, Carl R., and Applebaum, Edmund. Ultrasonic cavity preparation. II. Progress report. J.A.D.A. 50:414 April 1955.

8. Oman, Carl R. Further report on the use of ultrasonics in dentistry. Ann. Den. 40:1 March 1955.

9. Balamuth, Lewis. Technical background on the Cavitron ultrasonic dental unit. Read before Academy of Dentistry, November 18, 1954, New York.

10. Hansen, Louis S., and Nielsen, Arne G. A study of the biologic effect of an ultrasonic dental cutting instrument. Presented before the International Association for Dental Research, March 18, 1955, Chicago.

11. Hayes, H. C. Impact tool. U. S. Patent No. 1,966,446, July 17, 1934.

12. Bodine, A. G., Jr. Portable cutting tool. U. S. Patent No. 2,384,435, Sept. 11, 1945.

13. Bodine, A. G., Jr. Method of an apparatus for cutting and the like. U. S. Patent No. 2,460,918, Feb. 8, 1949.

14. Bodine, A. G., Jr. Method of and apparatus for cutting materials. U. S. Patent No. Re 23,657, May 19, 1953.

interest to one tracing the development of ultrasonics in the power tool field. The patent by Balamuth[15] is by far the one of most interest, as it deals with the utilization of ultrasonics in combination with an abrasive slurry to remove material from hard brittle substances in a unique manner.

OTHER USES OF ULTRASONICS IN DENTISTRY

The science of ultrasonics has had and is finding many applications in the industrial and scientific fields. Naturally, these uses are transferred to the professions. The following literature references give examples of how ultrasonics are being used in dental research and of suggestions for possible use in some types of dental therapy: Williams and Eickenberg[16] used sonic vibrations (9,000 cycles per second) in dispersing microorganisms in salivary samples. They believed that a more nearly homogeneous dispersion of bacteria was effected by the sonic method than by the mechanical shaking method.

The time required for decalcification of teeth in Waerhaug's vacuum method[17] was shortened by Arwill[18] who modified it by using high-frequency ultrasonic vibrations. Arwill also called attention to the employment of ultrasonics in the staining of tissues with silver nitrate by Coronini and Lassman.[19] Denoo[20] reported his clinical experience with an ultrasonic apparatus in the treatment of pulpitis, referred pain, postextraction edema and pain, painful eruption of third molar, and neuralgias. Ten short case histories are presented on seemingly successful responses. The author stresses his limited experience and the controversies that revolve around such therapeutic use of ultrasonics. Great caution needs to be exercised and more research is paramount before ultrasonic therapy should be used in the treatment of the foregoing clinical manifestations of disease.

Leone and Visendaz[21] treated a number of dental disease conditions with ultrasonic therapy and reported the best results in the treatment of inflammations where they believed improvement occurred more rapidly than normal. The authors state that no lesions were caused by the treatment because of their precaution in using recommended doses.

Stöger[22] in 557 instances used ultrasonics in the treatment of a number of clinical conditions, ranging from marginal gingivitis to trigeminal neuralgia. In general, the results reported are optimistic, but it must be stressed that in all of the foregoing reports the clinical investigations were limited, were not well controlled, and need repetition by other clinical investigators who will employ more rigorous test procedures.

LAY PUBLICITY

There have been numerous articles in popular magazines and newspapers informing the public about the possible benefits of the use of ultrasonics in cavity preparation. Almost all of this could be classed as premature, as the foregoing survey of the scientific and professional literature shows. The role of ultrasonics in the preparation of tooth cavities is yet to be determined. Most of this publicity has caused a demand by the public for a method that is not yet available, except

15. Balamuth, L. Method and means for removing material from a solid body. U. S. Patent No. 2,580,716. Jan. 1, 1952.

16. Williams, N. B., and Eickenberg, C. F. Effects of sonic vibration on the numbers of micro-organisms cultivable from human saliva. J. D. Res. 31:428 June 1952.

17. Waerhaug, Jens. Decalcification of bone and teeth under vacuum—a rapid method for producing hard tissue preparations. J. D. Res. 28:525 Oct. 1949.

18. Arwill, Tore. Decalcification of the teeth: a new method using supersonic radiation. Acta Odont. Scand. 10:63 July 1952.

19. Coronini, Carmen V., and Lassman, G. Intenswierung der Silberimprägnation des Nervengewebes nach Gratzl durch Ultraschallung. Kongressbericht der Erlanger Ultraschall-Tagung, 1949, p. 72.

20. Denoo, C. J. L'ultrasonotherapie en art dentaire. Rev. belge de stomatol. 49:189 June 1952.

21. Leone, V., and Visendaz, A. Gli ultrasuoni nella terapie stomatologica. Gaz. med. Ital. 112:29 Feb. 1953.

22. Stöger, H. Zur Frage der Anwendung des Ultraschalls in der Zahn- Mund- and Kieferheilkunde. Österr. Ztschr. für Stomatol. 50:365 July 1953.

for investigative purposes. The device is in the experimental stage and is not available for use generally. The American Dental Association has made an attempt to correct some of this misinformation in the lay publicity.[23]

AVAILABILITY

The sole producer of a commercial ultrasonic dental handpiece that is currently available is the Cavitron Equipment Corporation of Long Island City, N. Y.

A limited number of the devices are available for investigative programs at $1,800 a unit. An order form, supplied by the manufacturer, states that the purchaser agrees that any experimental results will be made available to the research department of the Cavitron Corporation. The form also states that the purchaser shall have the right, within one year from date of delivery, to exchange the unit for a later model without additional expense, exclusive of shipping charges. A number of institutions and individuals have purchased the unit under the foregoing conditions. This seems to indicate that the Cavitron Equipment Corporation is willing to have the dental schools, institutions and individuals do research on the effect of the process on tissues, on its ultimate use in clinical operative dentistry, periodontics and endodontics, and on design and performance of the unit in field tests, and to report to the company, providing the investigators purchase the apparatus for $1,800.

The scarcity of published data shows that there is a need for extensive investigation of the effects of the use of this ultrasonic device in operative dentistry, and on its comparative efficiency and desirability in relation to currently available equipment. Of course, such an investigative program should have preceded the unprecedented lay publicity campaign put on by paid publicity agents.

RECOMMENDATION

Until there is sufficient evidence available in the form of published and confirmed professional and scientific reports, the Council on Dental Research believes it is premature for any general acceptance of the ultrasonic method of cavity preparation and of ultrasonic therapy in the treatment of oral disease. Both of these uses are in the experimental state and patients should be so advised.

23. News of dentistry. Protests article on ultrasonic drill. J.A.D.A. 49:608 Nov. 1954.

Cases and Comments

TECHNIC OF CROWN AND BRIDGE CONSTRUCTION

By Jerome S. Mittelman, D.D.S., New York.

Each step in crown and bridge prosthesis bears directly on the success of the finished reconstruction. A procedure which lends more accuracy to bite determination and occlusal harmony and that can still be carried out with ease could be of great value to the profession.

The technic described was first used by the author in the construction of a bilateral bridge in which all available maxillary teeth were splinted with full crowns. The problem of obtaining a satisfactory bite was encountered. The bridge was constructed by means of the double casting technic in which gold copings are first tried on the prepared teeth, a plaster impression is taken with the copings in place, the superstructure is cast and the bridge completed. The same bite technic can be used, however, if simple transfer copings made of technic metal are used.

In this instance, the patient had been wearing temporary acrylic resin splints, one on the right side and one on the left, which had been adjusted to proper occlusal harmony. With the splint in the mouth maintaining vertical dimension on the right side, copings were inserted on the left side, and self-curing acrylic resin was placed on their occlusal surfaces. When the patient closed his mouth the impression of the moistened opposing teeth registered in the soft acrylic resin while the splint guided the bite into the predetermined centric position. The splint was then removed from the right side, and copings were inserted.

Again, soft self-curing acrylic resin was placed on the occlusal surfaces. Now when the patient closed his mouth, the left side copings with cured, acrylic resin on their occlusal surfaces guided the bite, which was this time registered on the right side.

With acrylic resin occlusal imprints on all copings, no wax bite was necessary, and the opposing countermodel could be articulated with ease and accuracy after a plaster impression was taken with the copings in place.

Obviously, this technic for registering bites can be used for simple bridges. There is greater facility at the chair where the operator can be more confident of the exactness of the bite, and the laboratory procedure can be carried out with more precision than with the use of customary wax bites.

30 East 60 Street

FRACTURED ROOTS

By Stanley Sutnick, D.D.S., Miami Beach, Fla.

The patient, a white man aged 21, had fallen when he was nine years old. The central incisor had become sore, but all symptoms soon cleared. No roentgenograms were taken at that time.

At 13, because of the congenitally missing lateral incisors, orthodontic treatment was instituted. The central incisors were moved away from the fractured roots as is seen in the roentgenogram (illustration). The periodontal membrane is normal around both the fractured root tips and the main portion of the central incisors. The teeth are normal in color when transilluminated. They respond to the vitalometer exactly as do the adjacent teeth.

Central incisors moved away from fractured roots in orthodontic treatment

605 Lincoln Road

The Reader Comments

THE JOURNAL *devotes this section to comment by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. At the request of the author, signatures will be deleted before publication. Printed communications do not necessarily reflect the opinion or official policy of the Association. Your participation in this section is invited.*
The Editor

STANNOUS FLUORIDE DENTIFRICE

I have read your recent editorial "Early Reports on New Dentifrice Promising: Let's Hope the Promise Will Be Fulfilled," J.A.D.A., February 1955, which refers to a portion of the human clinical dental caries studies conducted by me and my coworkers with a stannous fluoride dentifrice.

I wish to express my agreement with the primary theme of your editorial; however, I believe it is desirable to add certain facts, and in so doing, point out that the history of the stannous fluoride-containing dentifrice is substantially different from that of the others mentioned in the editorial. The difference is in the scope of the chemical research and animal experimentation which took place prior to the clinical studies. We have published our observations on the relation of the active ingredient, stannous fluoride, to the solubility of dental enamel and the prevention of experimental dental caries.

The first publication of chemical studies was in 1947 (Muhler and Van Huysen, J. D. Res., 26:119 April 1947), and the first direct evidence of the superiority of stannous fluoride in preventing dental caries in animals was reported five years ago (Muhler and Day, J. A. D. A., 41:528 Nov. 1950). In the meantime a large number of other papers bearing on the subject have been published. Moreover, there is corroborative clinical evidence already published that stannous fluoride is highly promising when it is topically applied (Howell, and others, J. A. D. A. 50:14 Jan. 1955).

All of us who are interested in dental health are anxious to find effective anticariogenic agents. No one appreciates better than the scientists who conduct and evaluate such a product as the fluoride-containing dentifrice mentioned in your editorial the seriousness of their responsibility toward the profession, the public and themselves. Such scientists realize the importance of accurately and critically evaluating their work.

I hope that I am my most severe critic, but since many of these experimental studies have been repeated and corroborated by numerous reputable scientists besides myself, it is thought to be in the best interest of dentistry to publish these studies as well as to suggest the use of such a product.

However, we do have evidence to suggest that it is now possible to produce a dentifrice more effective than the one reported in THE JOURNAL (J.A.D.A. 50:163 Feb. 1955). On the basis of the available clinical studies alone, it would seem that this product, from a scientific viewpoint, has been evaluated much more critically and thoroughly than the numerous other items referred to in your editorial.

I certainly share your hope that this product will succeed, but if it does not I will oppose its use as strongly as I now support it. However, in the interim I will continue to work hard on the solution of the dental caries problem until a satisfactory product is available.

Joseph C. Muhler

REVIEW OF DENTAL ASSISTANTS' TEXTBOOK INCORRECT

In the August 1954 book review section of THE JOURNAL there appeared the following statement in a review of Irwin Robert Levy's book *A Textbook for Dental Assistants*. "The ten chapters in this book, simply written and well illustrated, are designed for the dental assistant who wishes to prepare herself for the certifying examination of her association without taking prescribed courses."

The fact is that this textbook is to be used by those who are taking a prescribed course.

No one can prepare herself for the certifying examination given by the American Dental Assistants Certification Board (not by her association) simply by reading this or any other textbook. Applicants for certification must prepare by taking courses recognized by the American Dental Assistants Association and must meet other requirements in respect to experience and membership in the Association.

Anna Carey, secretary-treasurer, American Dental Assistants Certification Board

DANGERS OF RADIATION

The article "Dangers of Scattered Radiation in Dental Practice" by John F. Meklas in the August 1954 JOURNAL requires some comment. Unless the reader is well acquainted with the principles of radiation physics he may have several misconceptions about radiation protection in the dental office after reading this article.

The following comments are based on the recommendations of the National Committee for Radiation Protection contained in the National Bureau of Standards Handbook 41, *Medical X-ray Protection up to Two Million Volts.* (For sale by the Superintendent of Documents, Washington 25, D. C. 25 cents.)

The terminology used in the article does not coincide with the accepted definitions, which are given in Handbook 41. The title itself implies that the greatest radiation danger in dental radiography is from scattered radiation. All radiation is dangerous, whether it is the useful beam passing through the cone, the leakage radiation through the housing of the tube head or the radiation scattered from the patient and other objects. Although the scattered radiation may represent the major source of stray radiation, the leakage is in any case not insignificant. It is important that the dentist and his office personnel be aware of all potential hazards.

The author quotes other publications incompletely or misquotes them. For instance, he infers that results of "radiation exposures" to animals can be applied to humans. He says, "In experiments carried out at Oak Ridge, animals were exposed to varying degrees of radiation."

The dosage rate to these animals was considerably higher than that which would occur in a normally operated dental installation. Besides, because of differences in biological response, results of such experiments with animals cannot be extrapolated to man.

The manner in which reference is made to "Carcinogenic effect . . . lymphatic leukemia, lung cancer and osteosarcoma" may cause the dentist to become unduly alarmed and, as a consequence, reduce his use of the roentgen ray in diagnosis to the possible detriment of his patients.

The author states, "If a dentist takes three full-mouth roentgenograms a day, standing 3 feet from the patient and behind the roentgen-ray head, it is possible he may absorb a pathologic dose of radiation in one week."

According to the author's Table 2, the maximum amount of radiation falls on the chest in the above situation and amounts to 13.8 (it is assumed that this figure means milliroentgens) per 14 film exposures. The following computation is easily followed:

13.8 (mr) x 3 (full mouth roentgenograms) = 41.4 (mr per day) maximum radiation falling on the body

41.4 mr x 6 days = 248.4 mr per week

Handbook 41 states, page 1, "*Permissible Dosage Rate.* The maximum total dose to which any part of the body of a person shall be permitted to be exposed continuously or intermittently in a given time. It shall be 0.300 r per week."

0.300 r = 300 mr

According to Table 2 the author should have stated that under these conditions the operator would receive 83 per cent of the permissible dosage rate.

As long as the dentist operates his equipment in a manner which does not expose himself or his office staff to over 300 mr per week, he is within the permissible dosage rate and will not be subjecting himself to a "pathologic dose of radiation."

The author is not consistent in another instance. He says, "The seriousness of this problem can be seen when it is realized that the radiation received in the dental office is cumulative, and it may be that last exposure that causes the damage, the one from which an operator may not recover easily." He then quotes from Muller about the effect of dose distribution on radiation-caused mutations. This quotation is out of context. Additionally, he contradicts himself in the next paragraph.

"There is popular belief, not substantiated by scientific data, that some of the accumulated radiation is dissipated when the individual is away from radiation. If the dentist is out of his office one day each week, he will lose approximately 1/7 of the radiation received that week, or if he takes a month's vacation per year he will lose 1/12 of one year's absorbed radiation."

One could think from reading the above passage that the dentist who has been sub-

jected to roentgen ray radiation becomes "charged" with roentgen rays and that by being "out of his office" the dentist can dissipate the "accumulated radiation." The final paragraph of this article repeats this gross misunderstanding of radiation physics. It states, "Dentists should take as much vacation as possible since some of the accumulated radiation is dissipated when the individual is out of his office."

Such totally wrong statements and the very inept management of the data can easily lead the reader to a gross misconception of the actual hazards of dental roentgenography.

Vacations are not considered protection against overexposure to radiation. If the maximum permissible dose is not exceeded, there is not expected to be any detectable body injury to a person at any time during his life.

The problems of the monitoring and the evaluation of data from a radiation survey are very complex. It would be desirable to obtain assistance from a person experienced in radiation physics for the carrying out and reporting of work of this type.

Doctor Meklas is to be complimented on his interest in a somewhat neglected area of dental practice. Certainly no phase of dental practice is more important than that of making an accurate diagnosis. Because of this the use of roentgen ray radiation by the dentist will continue to grow and, as Doctor Meklas states, so will the hazards to the operator.

Robert J. Nelsen and Scott W. Smith, National Bureau of Standards

MANAGEMENT OF THUMBSUCKING

In the February issue of THE JOURNAL I read the interesting article by Harry Cimring, "Management of Finger-sucking Habits." The author was kind enough to quote me. However, the quotations being incomplete and taken out of context misrepresent my article.

For example, Dr. Cimring states, "Sillman's first statement that 'thumb-sucking was prone to affect only those with poor bites' is rather difficult to demonstrate, whereas his second statement, 'teeth displaced by thumb-sucking spontaneously find correction after the activity has been discontinued,' is simply wrong in the majority of cases."

In the summary of the article which Dr. Cimring quotes I stated, "Thumb-sucking was prone to affect those with poor bites but had little or no effect on the good bites." This fact was demonstrated by casts and histories of patients from birth to 14 years of age and older.

The quotation "Teeth displaced by thumb-sucking spontaneously find correction after the activity has been discontinued" is not only misleading but erroneous, since Dr. Cimring has omitted my very important qualification of age limit. My case reports showed that spontaneous correction took place if the habit was relinquished by the age of four years. If the habit persisted beyond that age, especially when poor occlusion existed to start with, the poor occlusion was accentuated and did not correct itself. My article presents cases to demonstrate this fact.

I am in agreement with Dr. Cimring's casual approach to the problem. The use of a plate acceptable to the child to act as a reminder can be used successfully in selected cases.

J. H. Sillman, New York

MORE ON THUMBSUCKING

I would like to clarify my position on the statements I attributed to Dr. Sillman. The quotations were taken from a letter to the editor signed by Norman Reider and Anneliese F. Korner in which they quote Dr. Sillman. The letter appears in THE JOURNAL, July 1952.

If Dr. Sillman has been misquoted or quoted out of context (for which I am sorry) the error occurred then—July 1952. Further, if Dr. Sillman has been misquoted or quoted out of context, his position should be made clear as he has now done in his letter to the editor. In fact, the correction should have been made back in 1952. There was no attempt on my part to misrepresent Dr. Sillman's article.

I still think the statement ". . . thumb-sucking was prone to affect only those with poor bites . . ." is rather difficult to demonstrate and is an oversimplification of a complex diagnostic problem. I, for one, would hesitate to attempt to catalogue what portion of a given malocclusion was caused by finger-sucking habits, of which there are several types, and what portion by other causes, habits, pressures, deficiencies, irregularities and inheritances. Moreover, I feel much of the statement falls into that "which came first, the chicken or the egg?" never-never-land and cannot be answered easily.

Dr. Sillman and I have, I feel, an honest difference of opinion.

Harry Cimring, Los Angeles

MAY 1955

LON W. MORREY, D.D.S., EDITOR
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Editorials

Overenthusiastic promotion retards acceptance by profession of ultrasonic devices

Many of the questions that have occurred to dentists in recent months regarding the use of ultrasonic devices in dentistry are answered by the Council on Dental Research in this month's issue of THE JOURNAL, pages 573 to 576. From this report and from other reports recently published it is evident that even though preliminary studies indicate that the dental use of ultrasonics bears promise, a vast amount of research is required before the practicability and safety of the procedure can be determined.

The employment in dentistry of the magnetostriction principle is still definitely in the experimental stage, and any effort by publicists to create a popular demand for its use is both unjustified by accomplished fact and contrary to the best interest of the public.

Oman and Applebaum,[1] reporting in last month's issue of THE JOURNAL on the clinical results which they obtained through the use of their ultrasonic technic on 40 patients, conclude that "Further definitive studies are necessary before this new technic of cavity preparation can be put into general use."

Nielsen, Richards and Wolcott,[2] reporting on the same subject in the same issue of THE JOURNAL, state:

> . . . there seems no reason to believe that a magnetostrictive device for dental operative purposes is not a sound, practical piece of equipment from the mechanical standpoint. . . . It . . . awaits further improvement and further testing on biologic specimens and extracted teeth before it can be introduced to clinical practice. . . . Any predictions about the eventual role of this instrument in the clinical preparation of cavities are premature.

In a subsequent report Nielsen[3] again cautions, "The lack of sufficient data on the biologic effect of the method of cutting necessitates the deferment of any clinical applications." And at the annual meeting of the International Association for Dental Research last month, members were cautioned by Hansen and Nielsen[4] that disturbances in the enamel formation of guinea pigs were more severe and more frequent when the tooth structure of those animals was cut by ultrasonic than by rotary methods.

Despite the growing volume of precautions issued by competent researchers who are making an exhaustive study of the use of magnetostriction instruments, at least one manufacturer of ultrasonic equipment continues to promote his product through the public press. This is being done with the full knowledge that the mechanism is not perfected to the point that it can be accepted by the profession. Why a skilled promoter cannot realize that such eager-beaver, injudicious actions injure rather than aid the product is beyond comprehension.

The profession awaits with the utmost eagerness any new equipment, any new treatment and any new device that will improve dental service and ameliorate dental distress and discomfort. But members of the profession, and in the final analysis the public as well, will form their opinion of such devices on the findings of the researcher rather than on the promises of the promoter.

1. Oman, Carl R., and Applebaum, Edmund. Ultrasonic cavity preparation. II. Progress report. J.A.D.A. 50:414 April 1955.

2. Nielsen, Arne G.; Richards, James R., and Wolcott, Robert B. Ultrasonic dental cutting instrument: I. J.A.D.A. 50:392 April 1955.

3. Nielsen, Arne G. Ultrasonic dental cutting instrument: II. J.A.D.A. 50:399 April 1955.

4. Hansen, Louis S., and Nielsen, Arne G. Study of the biologic effect of an ultrasonic dental cutting instrument. Presented before the thirty-third general meeting of the International Association for Dental Research, Chicago, March 18, 1955.

Colleagues abroad report postwar progress of dentistry

This month THE JOURNAL presents a symposium of reports on dentistry abroad. Readers in the United States interested in the work of their colleagues in other countries will be impressed by the complex problems facing dentists abroad, and by the substantial gains made by them in the postwar period.

Erich Müller, president of the Dental Federation of Western Germany, clarifies the history of the university-educated dentists and the mechanically trained technicians. He reports the steps which recently have led to unification of the 15,000 *Zahnärzte* and the 15,000 *Zahnkünstlern*. What he has to say about the problems of dealing with the national social insurance system and the postgraduate education of the dental profession has much pertinence for dentists in all countries.

Fali S. Mehta, honorary general secretary of the All India Dental Conference formed in 1946, tells of the successful efforts of the dentists of India to elevate their

profession. Today there are 3,351 dentists, six dental colleges and two dental journals in that nation. Benevenida B. Eraña, writing from Manila, traces a century of dental progress in the Philippines. There are now 6,000 to 7,000 dentists in that country, a Philippine Dental Association said to be patterned after the American Dental Association and ten dental schools. Knut Gard describes the conditions facing the 1,900 dentists practicing in Norway, of whom about 500 are fully or partially engaged in public dental service. The nation's one dental school, the independent Royal Dental College in Oslo, graduates 50 dentists annually. Work on a second dental school at Bergen will start this year.

Kalevi Koski, head of the department of dental orthopedics at the Institute of Dentistry, University of Helsinki, describes in some detail the education given Finnish dental students at the nation's one dental school, which enrolls about 60 students annually. Aiji Kaneda, reporting from Japan, states that the number of dentists there was estimated at 28,941 in December 1953, there being one dentist for every 2,980 people. In addition, there are about 5,000 dental technicians and 452 dental hygienists. He discusses the difficult problems which have arisen concerning the 25 year old health insurance system which today covers 65 per cent of Japan's total population. A. M. Horsnell, writing from London, reports the interesting experiments being conducted in dental education. There are 17 dental schools in Great Britain, each attached to a university; these graduate about 500 to 600 dentists annually.

In addition to the articles on the history and present status of dentistry, other articles in this issue report dental research by dentists in Mexico, India, South Africa, Greece and Uruguay. All the articles contribute to a clearer concept of the conditions surrounding dental practice abroad. It is to be hoped that each year THE JOURNAL will be able to devote one issue to the progress of organized dentistry abroad. Our coming sister publication, DENTAL ABSTRACTS, will also further this presentation of the progress of world dentistry by bringing each month abstracts and reviews of all the important dental literature being published today in all the countries of the world.

International Correspondence

NEWS FROM AUSTRALIA

The federal office of the Australian Dental Association has been transferred to Melbourne where the Congress of the Association will be held March 5-9, 1956. The Congress will be held at Melbourne University, and the scientific program and trade exhibit will be housed in its buildings.

The Congress has been modeled on the Fédération Dentaire Internationale Congress held in London during 1952 with the difference that the international reports of the F.D.I. meeting will be replaced by a limited number of lectures covering all areas of dental practice. The main theme will be preventive and conservative dentistry. Table clinics and demonstrations will provide a wide range for practical and technical expositions.

Several international visitors are expected; Miles Markley of Denver, Colo., and John Walsh, dean of the Otago Dental School, New Zealand, have accepted invitations to lecture. Melbourne in March has delightful weather; it is the fall season, and autumn is an ideal time for a vacation. All visitors will be assured of a pleasant time and a hearty welcome from their Australian professional colleagues.

NEW DENTAL JOURNAL

As forecast in previous letters, a national dental journal should appear shortly—probably before the end of 1955. This result has been achieved by a merger of the three existing journals: the *Australian Journal of Dentistry*, the *Dental Journal of Australia* and the *Queensland Dental Journal*. These journals have, in the past, made outstanding contributions to the progress of dentistry in Australia. Fusion into a single publication has long been considered essential to the progress of dentistry in Australia.

The Association has been successful in its negotiations with the Repatriation Commission to have regulations amended so that it is now no longer necessary for war widows and their children to obtain the authority of a medical practitioner before having dental treatment completed at the Commission's expense. This change removes a wasteful, time-consuming procedure which was not in the best interests of the dental profession.

FLUORIDATION

Fluoridation of community drinking waters has nowhere become an established procedure, but following recommendations from the National Health and Medical Research Council, state committees have been established to study the problems associated with the introduction of fluoridation. These committees are widely representative of various interests in the academic and practical fields, and the dental profession is satisfactorily represented.

The Australian Dental Association federal council deemed it wise to pass certain resolutions at this stage in order to clarify the stand taken. They are:

> That this Federal Council of the Australian Dental Association after full consideration of present information available, reaffirms its opinion that the fluoridation of communal water supplies is a national health measure and formally endorses the procedure as an important contributory factor in the prevention of dental decay;
>
> This Council wishes to stress to all public bodies and health authorities the importance and desirability of this preventive measure and

draws their attention to the appropriate resolutions of the National Health and Medical Research Council of Australia of December 1953.

This Council further stresses the necessity for proper and adequate scientific control of the establishment and conduct of the procedure and also endorses the opinion of the National Health and Medical Research Council that self-medication of fluorides by the individual is most inadvisable.

This Council is of the opinion that a careful study of the effects of the fluoridation of drinking water should be undertaken wherever the procedure is established.

SEMINAR IN HEALTH EDUCATION

In January 1955, in cooperation with the World Health Organization, the Commonwealth Government conducted a national seminar in health education in Canberra to discuss technics, methods and tools in the practice of health education of the public. The seminar was attended by representatives of many disciplines, including the dental profession of Australia and near overseas areas. In addition, two representatives of the World Health Organization from Manila and Geneva were present as advisers.

The problem of illegal practice of dentistry still persists. Dental mechanics continue their attempts to lower the standards of dental practice by seeking to amend the various state dental acts. In Tasmania, however, a select parliamentary committee was appointed to investigate the claims of the dental mechanics.

Evidence was taken throughout the whole state, and the profession, the mechanics and the public were invited to contribute. The committee found that there was no justification whatsoever for any of the claims of the mechanics and recommended that legislation be introduced to deal effectively with illegal practitioners.

Robert Harris, Sydney, Australia

NEWS FROM GREAT BRITAIN

Jack Gilbert gives us a rather different view of the General Dental Service. World War II brought devastation, misery, poverty and all kinds of suffering. The National Health Service has provoked a flood of criticisms, argument and counterargument, controls and committees ad nauseum. Yet from the apparent blackness of the World War and the National Health Service there emerges at least one bright ray of dental moment. Even those practitioners who condemn the National Health Service dental services admit the following. The war, with all its unhappy features, instilled in the minds of thousands of young people an awareness of the need for dental health and hygiene. The result has been a sustained desire to maintain their oral condition at a high level. The dental services of the National Health Services, with their accent on conservative work, have provided a means for these young people to receive the conservative treatment that would almost certainly have been financially impossible had they had to rely on their own resources.

In addition, many young men are successfully encouraging their wives, who were not often involved in the Armed Forces, to achieve dental health also. Patently, where parents are interested in their own health they evince an almost greater interest in the dental welfare of their children. Unquestionably, the dental health education absorbed during

service in the Armed Forces plus the opportunity of receiving conservative treatment at small cost when returning to civilian life is slowly but surely producing a great number of people with a new attitude to dental health and dental care.

BRITISH DENTAL ASSOCIATION

At the Representative Board meeting of the British Dental Association held last month, W. Stewart Ross writes, L. E. Balding was elected chairman of the Council, succeeding A. P. Husband, who has held office for the record term of ten years. Mr. Husband will be installed as president of the Association at the annual meeting in Glasgow in July. The new Representative Board, consisting of members from all over Britain and Northern Ireland, met for the first time in January and will continue to meet three times a year for the next three years. At the end of the three year period new elections will be held among the 20 branches of the Association.

The following ten members have been elected to form a select committee from which the delegates and alternates will be chosen to represent the British Dental Association at the annual meeting of the Fédération Dentaire Internationale in Copenhagen in August: Prof. J. Aitchison, dean of Glasgow Dental School; Prof. R. V. Bradlaw, dean of Newcastle Dental School; J. W. Gilbert, treasurer of the British Dental Association; C. B. de Vere Green, member of the Representative Board, British Dental Association, and immediate past president of the American Dental Society of London; W. Peebles, vice-chairman of the Representative Board, British Dental Association; Seymour Robinson, honorary secretary, Metropolitan Branch of the British Dental Association; R. O. Walker, member of the Council of the British Dental Association; W. R. Cleverley; W. Stewart Ross, member of the Council of British Dental Association, and Chairman of Council of the Fédération Dentaire Internationale, and J. A. T. Rowlett, member of the Representative Board of the British Dental Association, and national treasurer in Great Britain for the Fédération Dentaire Internationale.

ITEMS OF INTEREST

The Royal College of Surgeons celebrated the Hunterian Festival on February 14, the date of John Hunter's birthday in 1728. The celebration takes place every second year and is marked by an oration and a festival dinner, held this year for the first time in the new Great Hall. The Hunterian orator was Sir Cecil Wakeley, Bt., immediate past president of the College.

The 75th annual conference of the British Dental Association will be held this year in Glasgow, July 4-9. An attractive program both scientific and social has been arranged. Prospective visitors should write to Mr. H. Parker Buchanan, secretary of British Dental Association, 13 Hill St., London W. 1., for further information. Glasgow is famed the world over for her shipbuilding, engineering and industrial accomplishments, but it is not always realized that by virtue of her geographical location, Glasgow offers great attractions to the tourist.

No other center in Scotland, or for that matter in Great Britain, provides such a variety of scenic beauty and historic interest. During the annual conference of the British Dental Association, J. Menzies Campbell will have some of his fine historic dental collection on display in the Hunterian Library of the University of Glasgow.

Among the smaller organizations in the dental profession is the Continental Dental Society, a thriving and active organization founded in 1942 by colleagues who for the most part had graduated and practiced in Europe and who had settled in Great Britain around the war

period. There are 130 members. The Society meets at the Eastman Dental Institute twice yearly. It has a spring meeting in April and an autumn meeting in October. There are in addition special meetings, such as a dinner at the Royal College of Surgeons on January 25 at which Mr. C. de Vere Green was guest speaker.

The chairman of the society is Mr. H. J. Turkheim, honorary professor at Hamburg University. The honorary secretary is Mr. F. G. Salomon of Somerset. At the 1954 autumn meeting, papers were read by H. H. Ucko on "Dental Aspects of Endocrinology" and Mr. S. L. Drummond-Jackson on "Intravenous Anesthesia" and "Some Practical Ideas in Dentistry." The society is planning to produce a denture guide booklet, with no commercial backing, to aid patients in understanding better how to manage and care for their dentures. An attractive, scientific and social program has been planned by the society for its members during this current year.

The third meeting of the British division of the International Association for Dental Research (honorary secretary, Maurice V. Stack) was held at the London Hospital Medical College April 15 and 16 under the chairmanship of Professor MacGregor of Birmingham. The increase in original research is indicated by the submission of 25 titles this year; the two previous meetings included 35. Dental schools in London, Birmingham, Manchester, Liverpool, Newcastle, Leeds and Bristol were represented. Three papers were presented by dental research workers at the Atomic Energy Research Establishment, and others came from Cambridge and Belfast, Northern Ireland. Three were listed from Scotland. A paper was received from Dr. Appleman, professor of bacteriology at the University of Southern California.

We have been delighted to welcome Prof. Lester Cahn of Columbia University back to the United Kingdom. Dr. Cahn lectured in Scotland March 17 and in Newcastle March 19, giving the Founders' and Benefactors' Lecture at the Sutherland Dental School. The lecture was entitled "The Foundations of Dental Science." Later Dr. Cahn talked in London on "Oral Medicine," a special lecture arranged by the University of London.

Prof. Martin Rushton writes of his enjoyable tour in the United States and of the magnificent hospitality he is receiving. The Royal College of Surgeons of Edinburgh at an impressive ceremony on February 24 installed 71 colleagues as Fellows in dental surgery.

Gerald H. Leatherman,
D.M.D., F.D.S.R.C.S.

Congress, now well into the final half of its 1955 session, seems disposed to postpone action on practically all health legislation except that designed to aid and promote research and education.

The outlook is fairly bright for pending bills that would authorize federal funds to pump-prime construction of research and teaching facilities in dental schools. But the Administration's hopes for new laws to reinsure voluntary health insurance, expand health care benefits for servicemen's dependents and initiate contributory health insurance for some two million federal employees have begun to decline.

Congressional leaders hope for adjournment within 90 days. This means that the House and Senate will have to step up the pace considerably, with reference to handling of health bills, if such "must" measures as extension of the doctor-draft law and adoption of federal reinsurance are to be enacted. But the fact is that reinsurance, despite the emphasis placed on it by President Eisenhower, has gained few supporters on Capitol Hill and even the doctor-draft extension faces rugged opposition when a showdown is reached on this bill probably some time in May.

OPPOSITION TO SPECIAL DRAFT

Opposition of organized medicine and dentistry to peacetime conscription of doctors is not the sole reason for the dubious outlook of this bill that would give the plan two more years of life, until July 1957. Capitol Hill is receiving increasing numbers of complaints as a result of administrative peculiarities. The following is a typical example:

Recently the advisory committee to Selective Service received complaints from several dental school deans that draft-vulnerable members of their 1955 graduating classes had been informed by the Navy and Air Force that they could not expect to be commissioned and placed on active duty before the middle of 1956. This was bad news for those seniors who wished to start their obligated military duty—and have a professional income—as soon after graduation as possible.

Although it is supposed to be a coordinating center on military medical and dental manpower, the advisory committee had not heard of the policy announcement attributed to the Navy and Air Force. Because of the intensity of complaints, it sent a letter to all dental school deans suggesting that seniors who had been apportioned to the Navy and Air Force apply for allocation to the Army in order to improve their chances of early activation.

Two weeks later, the Department of Defense had received only seven requests for reapportionment. Actually the Navy and Air Force had not definitely stated that they would not activate newly graduated dentists until 1956. Rather, they had written to about 150 of them to say that those accepting commissions would be placed on active duty as vacancies occurred and conceivably some might not get into uniform before June 1956.

It was a comedy of errors that already has had repercussions on Capitol Hill and has led to new conferences. The purpose of these conferences is to make it possible for every 1955 dental graduate who wants to start active duty immediately to enter one of the three armed branches. It is such episodes as this that Congress committee members will examine closely before they approve any

bill for extension of the doctor-draft act.

In what is supposed to be a consolidated military establishment, these mix-ups are not supposed to happen. But it is a commonplace for one or more of the armed services to issue directives or information circulars on personnel matters without the knowledge of Department of Defense, Selective Service or its advisory committee.

INCREASE IN DENTAL FEES

According to a report made recently by the Bureau of Labor Statistics, dentists' fees in 1954 averaged 75 per cent higher than they were prior to World War II. Comparison with other services and commodities in the BLS consumer price index discloses that, for the same period, haircuts went up 165 per cent; shoes, 132 per cent; automobiles, 121 per cent, and all services combined, 75 per cent. Professional dental care costs went up no more and no less than the over-all average for semi-skilled, skilled and professional services.

Taking the average 1935-39 dental fees as 100, the dental fees in 1954 averaged 174.5. For fillings alone, the index was 174.1 and for extractions, 181.3.

For comparative purposes, physicians' fees were 160.3; general practitioners' fees, 161.1; surgeons and specialists, 154.9; optometrists, 133.2; hospital rates, 322.1.

In preparation for Congressional study of the feasibility of expanding health service benefits for dependents of military personnel, the Department of Defense has conducted a census to ascertain numerical proportions, geographical distribution and dependency classification.

The survey revealed that as of December 31, 1954, there were 2,591,777 dependents—wives, husbands, minor children and parents. (Combined strength of the Army, Navy, Air Force and Marine Corps was 3,180,532.)

Within continental limits of United States, dependents numbered 2,204,316; in territories and possessions, 118,632, and in foreign countries, 268,829. There were 1,163,630 wives, 1,573 husbands, 1,306,497 children and 120,077 parents dependent on the service person for at least one half of their financial support. Enlisted personnel accounted for 1,941,228 dependents and officers for 650,549.

CONTINUED GROWTH OF ASSOCIATION REPORTED TO TRUSTEES; BOARD OPPOSES DRAFT CALL FOR OLDER DENTISTS

"Total membership in the Association for the fiscal year reached the record high of 82,496 compared to 80,127 for 1953 and 77,722 for 1952," announced Harold Hillenbrand, secretary of the American Dental Association. The report on the Association's continued growth was made to the Board of Trustees which met at the Central Office March 31 to April 1. "At February 28, 1955, a total membership of 57,283 was recorded," Dr. Hillenbrand reported. This number was some 5,000 above the figure of a year ago. "If this trend is carried out, the current fiscal year will again show an increase in total membership," he said.

The Trustees discussed plans for the annual session, appointed a general chairman for the 1959 centennial celebration, evaluated reports from the various councils and took stands on pending federal health legislation. In addition, they discussed the dentist-physician draft law with Frank B. Berry, M.D., assistant secretary of defense (health and medical), who appeared before the Board on the last day of its meeting.

FEDERAL LEGISLATION

Dr. Berry informed the Board that the dentist-physician draft legislation was desired as a standby measure, to insure sufficient dental manpower for unforeseen events. He stated that in the event of Congressional refusal to extend the special draft, it would be necessary to seek amendments to the regular draft law.

Board members called Dr. Berry's attention to the fact that while Selective Service was calling older men to active duty, the Air Force and the Navy had notified senior dental students that their commissioning would be delayed until mid 1956 because quotas for these two services were filled. Dr. Berry stated that the Department of Defense would request the Air Force and Navy to reveal the number of excess men they had so that these men could be reallocated to the Army.

(On the last day of the meeting, the Board received news that the Rusk Committee had recommended to the Department of Defense that it cut back the calls on dentists over 40. Latest information indicates that 150 members of the 1955 dental graduating class had received notice that they could not be called to active duty until a year after graduation.)

The Board reaffirmed the Association's opposition to extension of the physician-dentist draft law. In addition, it stated that dental care provided the six month trainees of the proposed National Security Training Corps should be limited to emergency treatment.

Reinsurance • In other actions, the Board went on record against pending legislation for federal reinsurance of health care plans and federal mortgage loan insurance.

"The principle of reinsurance is not applicable to dental care programs at the present time," the Trustees stated. Moreover, they said, "reinsurance of dental health care programs involves the danger of providing federal subsidies for programs which are actuarially unsound."

Mortgage Insurance • Mortgage loan insurance for health facilities was opposed because "the federal government should

not stimulate the construction of additional dental treatment facilities within any community unless . . . existing dental facilities are not adequate." Prior to the passage of such legislation a survey of existing facilities should be made, the Board stated.

ABSTRACT JOURNAL

An annual subscription fee was established for the new abstract journal authorized by the House of Delegates at the Miami meeting. DENTAL ABSTRACTS, which will appear January 1, will sell for six dollars a year to domestic subscribers and for seven to subscribers in other countries.

ANNUAL SESSIONS

November 4-7 were picked as the dates for the 1957 annual session in Miami, Fla. The 1958 session in Dallas, Texas, will be November 10-13 and the 1959 centennial celebration in New York, September 21-24.

In addition, the Board approved an amendment to the *Manual for Annual Sessions* which requires that the nomination for Chairman of the General Committee on Local Arrangements shall be submitted to the Board of Trustees at least two years in advance of the annual session for which the chairman would serve.

Local Arrangements Committee • On recommendation of the General Committee on Local Arrangements, of which Francis J. Herz is chairman, the Board approved the following nominations for officers and committee members for the 96th annual session of the Association to be held in San Francisco October 17-20:

Vice-chairman • Robert O. Schraft.

Secretary • Lawrence R. Ludwigsen.

Honorary Chairmen • Frank M. Casto, Bernerd C. Kingsbury, John D. Milliken, R. Chester Dalgleish, John R. Abel, Raoul H. Blanquie, William B. Ryder, Charles H. Alter.

Honorary Vice-chairmen • Walter J. Winterhoff, William S. Smith, Allen M. Ito, Jack E. Ahlstrom, Allison G. James, DaCosta Clark.

Committee on Reception • Edward H. Windeler, chairman; W. Gordon Hazlett, vice-chairman; Don J. Aubertine, John W. Creech, Edward J. Hewlett, William G. Maison, Allen M. Olinger, Jr., Charles L. Shepherd, Jack Werner, Jr., Frank W. Zumwalt.

Committee on Information Services • Edward J. Lattig, chairman; Herbert E. Ward, vice-chairman; Joseph F. Atkinson, Edward A. Avakoff, Thomas H. Brady, Irwin L. Marcus, John J. Muzio, Marcel J. Smith, James F. Tackney, Bertram L. Wolfsohn.

Committee on Publicity • Reuben L. Blake, chairman; Raymond M. Curtner, vice-chairman; Francis L. Bushnell, Walter L. Cuthbertson, Harry B. Hambly, Jr., C. Stanley Lawrence, Jr., Roger N. MacMillan, Benjamin C. Reinke, Norman L. Wihr.

Committee on Entertainment and Social Events • T. Galt Atwood, chairman; L. Rizal Musser, vice-chairman, Lloyd H. Dahl, Thomas B. Devlin, George B. Eveleth, Alfred L. Flock, Leon W. Moser, George A. Selleck, Charles M. Silk, Fritz A. S. Winblad.

Committee on Women's Entertainment • Mrs. Robert O. Schraft, chairman; Mrs. Walter C. Harrison, vice-chairman; Mrs. Alfred E. Hughes, Mrs. Edwin J. Hyman, Mrs. Kenneth M. Jenkins, Mrs. Merle A. Kays, Mrs. B. Stanley Kern, Mrs. Elwood L. Wait, Mrs. Fritz A. S. Winblad, Mrs. Edward H. Windeler.

Committee on Clinics and Motion Pictures • G. Thomas Quigg, chairman; Walter C. Harrison, vice-chairman; Andrew J. Daneri, Charles W. DeGuerre, Arthur J. Duplisea, Frederic M. Epley, John H. Flint, Monroe S. Friedman, Robert Grosso, Everett C. Hartwell, Arthur J. Hemberger, Kenneth M. Jenkins, Lloyd E. Linehan, John D. Mayer, Charles R. Miller, Arthur A. Mugnolo, Leslie O. Myers, Walter E. Oswald, Joseph P. Pope, Francis H. Romick, Bernard N. Rosemont, John T. Scully, Ronald Sockolov, Elwood L. Wait, Clifton L. Wemple, Wilfred M. Wong, Charles H. Young.

ASSOCIATION CENTENNIAL

An invitation will be extended to the Fédération Dentaire Internationale to hold its 1959 annual session in New York City in conjunction with the Association's

centennial meeting, the Board decided. It is hoped that visitors from many countries will attend the one hundredth anniversary celebration.

Named General Chairman of the Committee on Local Arrangements for the 1959 session was William A. Fennelly of New York. Dr. Fennelly is president of the New York state dental society.

DENTAL HEALTH

Work of the Council on Dental Health in the field of welfare fund dental health care programs was commended by the Board. In the field of health care for the indigent, the Board approved a 14 point statement of principles on tax-supported personal health services for the needy. The statement had been drawn up by the Council on Dental Health and representatives of the American Hospital Association, American Medical Association, American Public Health Association and American Public Welfare Association.

Among the 14 points were: a program of personal health services for the needy should be administered by a single agency at the appropriate level of government; there should be professional supervision of all professional aspects of the program; persons eligible for service should have free choice of physician and dentist; conservation of good health should be emphasized, and the administrative agency should protect the rights and dignity of the patient.

In other actions, the Board approved for transmittal to the House of Delegates a revised policy governing the use of the Association's name on dental health education materials. The revision was submitted by the Bureau of Dental Health Education.

DENTAL EDUCATION

Dental Laboratories • The Council on Dental Education and the Council on Dental Trade and Laboratory Relations were urged to continue a close liaison with the National Association of Dental Laboratories "with a view toward setting up adequate refresher courses for the training of dental laboratory technicians." Such training should be by educational facilities approved by the Association, the Board stated. Attention should be given also, the Board said, to development of a program for those who are already employed in dental laboratories.

The Board requested the Council on Dental Trade and Laboratory Relations to continue its efforts to see that, if the National Association of Dental Laboratories adopts a fair trade practice code, the code will be one acceptable to the American Dental Association.

Dental Specialties • On the question of classification of dental specialties, the Board agreed that over-segmentation of dental practice should be avoided. It added that, in setting up a classification, caution should be exercised not to discourage advance study in all branches of dentistry.

Internships and Residencies • In another action, the Trustees approved the accreditation program of the Council on Dental Education, which now accredits hospital education programs as either fully approved or provisionally approved.

LIFE MEMBERSHIP

A special committee of the Board of Trustees was established to study all phases of the life membership program. A full report is to be made to the September meeting of the Trustees. Serving on the special committee are William R. Alstadt, Twelfth District, chairman; Howard B. Higgins, Fifth District, and Edward R. White, Fourth District.

Referred to the special committee and the Council on Membership was a resolution on the life membership program submitted by the Tennessee State Dental

Association. It provided that life membership in component and constituent society be a prerequisite to life membership in the American Dental Association.

INSURANCE

The Board concurred in a recommendation of the Special Committee on Group Life Insurance Program that a study of the Association's program be made by impartial and experienced actuaries.

NEW BUILDING

The special committee on Association headquarters reported that the cost of the building program would be higher than the estimates submitted originally to the Association and that the completion date would be June or July 1956. An additional sum of $510,000 was appropriated for construction.

ORAL SURGERY

The Special Committee on Problems in the Field of Oral Surgery reported on its negotiations with the American Medical Association on the definition of oral surgery. The Board decided to make a formal request to the A.M.A. Board of Trustees that the House of Delegates of the A.M.A. rescind its definition. In addition, the Board decided to publish an information bulletin on the oral surgery problem to be sent all members of the American Dental Association.

ADDITIONAL ACTIONS

Special Committee on Television • President Lynch appointed three members of the Board of Trustees to study the possibilities of a dental television program for the Association. Percy T. Phillips, Second District, will serve as chairman. On the committee also are A. F. Schopper, Sixth District, and John R. Abel, Thirteenth District. A sum of $1,500 was allocated to the Special Committee on Television.

Hospital Dental Services • A resolution adopted by the Board states that the Council on Hospital Dental Services shall accredit dental services "only in such hospitals which are currently recognized by an acceptable, national accrediting agency in the hospital field." In proposing adoption by the Board of this resolution, the Council outlined the complexities of evaluating the many facilities and services provided a hospital patient and stated "it is only in an integrated hospital organization that a solution [to the problems] can be found."

Hank Ketchum • The Board expressed its appreciation to Mr. Hank Ketchum for his contribution to the 1955 observance of Children's Dental Health Week. Mr. Ketchum contributed free of charge two drawings with a dental health message featuring the well-known comic strip character "Dennis the Menace."

Insurance Trustee • Paul W. Zillmann, of Buffalo, present Insurance Trustee, was appointed to a three year term as Insurance Trustee beginning January 1, 1955.

BOARD MEMBERS PRESENT

All officers and members of the Board of Trustees attended the meeting. Officers present were:

Daniel F. Lynch of Washington, D. C., president; Bernerd C. Kingsbury of San Francisco, president-elect; Curtis A. Haggard of Miami, Fla., first vice-president; Frederick W. Herbine of Reading, Pa., second vice-president; John E. Fauber of Washington, D. C., third vice-president; Harry Lyons of Richmond, Va., speaker of the House of Delegates; Harold Hillenbrand of Chicago, secretary; C. Willard Camalier of Washington, D. C., assistant secretary; Louis M. Cruttenden of Chicago, assistant secretary; H. B. Washburn of St. Paul, treasurer, and Lon W. Morrey of Chicago, editor.

Trustees attending the meeting were:

John R. Abel of Beverly Hills, Calif., Thirteenth District; William R. Alstadt of Little Rock, Ark., Twelfth District; Percy T. Phillips of New York, Second District; Clarence S. Renouard of Butte, Mont., Eleventh District; Howard B. Higgins of Spartanburg, S. C., Fifth District; L. H. Jacob of Peoria, Ill., Eighth District; Paul H. Jeserich of Ann Arbor, Mich., Ninth District; Charles H. Patton of Philadelphia, Third District; Edward R. White of Jersey City, Fourth District; Earl G. Jones of Columbus, Ohio, Seventh District; A. F. Schopper of Kansas City, Mo., Sixth District; Charles I. Taggart of Burlington, Vt., First District, and Lewis W. Thom of Minneapolis, Tenth District.

Association Affairs

RELIEF FUND CONTRIBUTIONS CLIMB TO NEW HIGH

Contributions to the Association Relief Fund climbed to a record high of $108,370 on April 11. Three new states, Connecticut, Massachusetts and Mississippi, exceeded their quotas, bringing the number of societies which have topped the 100 per cent mark to 42. The smaller societies (quota of $925 or less), with 109.9 per cent of quota, held nearly a three point lead over the larger societies (quotas over $925). The campaign will continue through June 30.

ASSOCIATION URGES GRANTS FOR RESEARCH FACILITIES

Only research can provide the knowledge essential for the development of effective measures to prevent dental disease, a Congressional committee was told recently. H. Trendley Dean, secretary of the Association Council on Dental Research, appeared before the health subcommittee of the Senate committee on labor and public welfare March 31 to urge passage of S. 849, a bill to provide 30 million dollars a year for three years for construction and expansion of research facilities of dental and medical schools and nonprofit hospitals and laboratories. Under the bill, grant recipients would match in equal amounts the funds received.

The Association spokesman pointed out the lack of facilities and equipment to carry out dental research. He reported on a recent Association survey which found there were inadequate research laboratories in 28 dental schools and insufficient research equipment in 34.

In calling for passage of the bill, Dr. Dean urged that grants "be distributed equitably" and "reflect an appreciation of the need for research in fields which are now neglected." In addition, he proposed that a provision be added to the bill to safeguard the schools from encroachment by the government on the administration of their research projects.

TIGHTEN VA DENTAL CARE; VOTE PAY HIKE FOR OFFICERS

The House of Representatives in mid-April approved and sent to the Senate H.R. 5100, which limits outpatient dental care for most veterans to a one-time completion basis and limits the period in which applications for treatment may be submitted to within one year of discharge from military service. The bill, reported out by the House veterans affairs committee, is in accord with Association policy.

Earlier, the committee had considered a bill introduced by Rep. George S. Long (D., La.) to liberalize the VA's outpatient dental care. After the Association and the VA testified against the bill, Representative Long scrapped his bill and introduced another accepting the one-time completion rule favored by the Association and the VA.

Other legislation of interest to dentistry was acted on by Congress in March.

Both houses approved pay increases for officers in service at least three years and for enlisted men after two years. The increases range from six to 25 per cent.

The House approved a budget for the Department of Health, Education and Welfare which includes $2,136,000 for the dental public health and research programs of the U. S. Public Health Service, an increase of $146,000 over the current budget.

DENTAL EDITORS TO MEET AT UNIVERSITY OF ILLINOIS

Editors of state society dental journals will try their hand at designing an attractive dental journal during the Fifth Conference on Dental Journalism June 12-14 at the University of Illinois, Allerton Park, Ill. Under the expert eye of professors from the journalism school, the editors will work out problems of layout and design in a workshop entitled "Pastepot and Scissors." The workshop is an innovation for a dental journalism conference.

Topics to be discussed at the conference include preventing printing problems, terms and tools in printing and engraving, editorial office procedure, editing the scientific manuscript and advertising assets of state dental journals. Conference speakers include both university faculty and persons working on dental journals.

W. W. MacQueen, president of the American Association of Dental Editors, and William L. Barnum, chairman of the Council on Journalism, will preside.

DENTAL CARE COOPERATIVE NOT BACKED BY ASSOCIATION

Claims of a lay-sponsored dental health care group that it has the support of the American Dental Association are false, according to Harold Hillenbrand, Association secretary. In a telegram sent April 19 to the Dental Care Cooperative of Seattle, Wash., the Association official notified the Cooperative that use of the Association's name in connection with the Cooperative's program "is wholly unauthorized and misleading" and continuation of the practice would result in legal action against it.

A newspaper article in the Centralia-Chehalis *Daily Chronicle* April 8 attributed to a Cooperative spokesman the statement that the care plan had the backing of the Association. It was reported also that the same statement appeared in advertising material published by the group.

The Association's statement that it did not support the group followed a similar announcement by the Washington State Dental Association.

The Cooperative has been advertising that it offers comprehensive dental care on an indemnity basis for premiums as low as two dollars a month.

CARL LAUGHLIN APPOINTED TO EDUCATION COUNCIL

President Daniel F. Lynch in April appointed Carl A. Laughlin of Clarksburg, W. Va., to the Council on Dental Education to fill the vacancy caused by the resignation of Carl A. Frech. Dr. Laughlin, who is secretary of the West Virginia State Board of Dental Examiners, will hold office until the 1955 annual session, at which time an election for the post will be held.

NEED SEEN FOR INTEGRATION IN TEACHING OF ANESTHESIA

A greater degree of integration is needed in the teaching of local anesthesia by the dental schools, according to participants in a conference on local anesthesia in dentistry held March 20 in the Central Office. The conference, sponsored by the Council on Dental Therapeutics and the Council on Dental Education, was at-

tended by members of the two Councils and representatives of nearly all the dental schools.

Among those on the program were Lester W. Burket, chairman of the Council on Dental Therapeutics; Stanley C. Harris, Ph.D., Northwestern University Dental School; Harry Sicher, M.D., Chicago College of Dental Surgery, Loyola University; Floyd D. Ostrander, School of Dentistry, University of Michigan; Robert C. Worley, Northwestern University Dental School; J. Roy Doty, secretary of the Council on Dental Therapeutics, and Shailer Peterson, secretary of the Council on Dental Education.

At a date to be announced later, a conference on general anesthesia will be held. To be discussed are the content of undergraduate and graduate courses in general anesthesia, the time that should be spent on them and the best methods of teaching. Attention will be given also to the amount of teaching in general anesthesia that should be included at the undergraduate level.

DENTAL TRADE GROUPS MEET WITH ASSOCIATION COUNCIL

A plan developed by the National Association of Dental Laboratories for certifying laboratory technicians and the status of a laboratory fair trade practice code were discussed at a recent meeting between representatives of the dental industry and the Association. Attending the April 17-18 meeting at the Central Office, in addition to members of the Council on Dental Trade and Laboratory Relations, were representatives of the American Dental Trade Association, the National Association of Dental Laboratories, the Dental Manufacturers of America and the Dental Dealers of America.

The work performed by dental laboratory technicians requires certain training and experience, stated representatives of the National Association of Dental Laboratories. Recognition of this fact has led the laboratory group to begin work on a certification plan.

It was reported also that the Federal Trade Commission was expected to hold hearings in June on a fair trade practices code for the industry. The American Dental Association will be invited to submit suggestions.

Walter E. Dundon, chairman of the Council, presided at the conference.

DENTAL FILM WINS MENTION IN NATIONAL FILM CONTEST

Hazards of Dental Radiography, produced by the National Bureau of Standards in Washington, D. C., in cooperation with the American Dental Association, won honorable mention in the medical science category of the Second American Film Assembly held April 4-9 in New York. It was the first time that films on dentistry were shown at an assembly of the Film Council of America.

Another film of interest to dentistry won a first prize. *The Wisconsin Cleft Palate Story,* produced by the University of Wisconsin and the Bureau for the Handicapped in Madison, Wis., placed first in the educational category. (This film will be available from the Film Library at the Central Office after May 15.)

Dentistry was represented among the judges as well as among the films. In addition to Helaine Levin, Association film librarian, were Meyer Klatsky, M. P. Chodos and William Rakower, dentists from New York.

NEEDS OF SCHOOLS PROBED IN COUNCIL SURVEY

"Dentistry has not remained idle waiting for free gifts, but . . . is helping itself" in providing funds for education, accord-

ing to Shailer Peterson, secretary of the Council on Dental Education. Dr. Peterson drew this conclusion from a survey recently completed by the Council which showed that in the last five years the dental schools have spent nearly 40 million dollars for building and equipment. The report showed also that in spite of this expenditure, the schools believe that some 50 million dollars must still be spent to bring dental education up to the standards that are desired.

According to the survey, about two thirds of the schools have inadequate facilities for classrooms, laboratories and clinics. Some three fourths have inadequate research laboratories. The greatest need for equipment is for that to be used in research. Eighteen schools said they could increase the size of their classes, but these same schools needed more than 29 million dollars to finance the expansion and to improve existing facilities.

TREND SEEN TOWARD BETTER DISTRIBUTION OF DENTISTS

An increase in the number of dentists and a better distribution of them throughout the country are reported by the Bureau of Economic Research and Statistics. The report is based on the 1955 *American Dental Directory* and is included in the Bureau's 1955 revision of the booklet *Distribution of Dentists in the United States by State, Region, District and County.*

The Directory lists 95,883 dentists, one per 1,669 persons. It is estimated that 84,000 of them are active in the profession. Of these, 8,135 serve in the Armed Forces, the U. S. Public Health Service and the Veterans Administration.

In the newest tabulation, a slight but definite trend toward a more uniform distribution of dentists was noted. All 15 states in the southeast and southwest regions of the country, which for some years have had the lowest proportion of dentists to population, showed an improvement in the dentist-population ratio. In 1955 the ratio of the southeast is 1:3,160, in 1954 it was 1:3,292. In the southwest the ratio is 1:3,011; in 1954 it was 1:3,068.

"We believe that some of the improvement results from the dissemination of information by the Association," stated B. Duane Moen, Bureau director. Association booklets, by providing such information as population and dentist distribution, average income of practitioners, provisions of state dental practice acts and state income tax rates, help the dentist to make a wise choice of a location in which to practice, Mr. Moen said.

FIRST QUARTER INDEX TO DENTAL LITERATURE READY

Some 1,300 individual items from 200 dental journals have been indexed in the first quarter compilation (January through March) of the 1955 *Index to Dental Literature,* according to Donald Washburn, director of the Bureau of Library and Indexing Service. Included in the entries, in addition to scientific articles, are 176 obituaries, 70 book reviews and 30 editorials.

Copies of the *Index* may be obtained from the Order Department at the Central Office. The subscription rate for the quarterly compilations and the bound annual volume is $30. Additional subscriptions sent to the same mailing address are $15.

SUBSCRIPTS • Carl Sebelius, chairman of the Association's subcommittee on civil defense, was invited to attend the atomic test series at the Nevada proving grounds in April. The invitation was extended by the Federal Civil Defense Administration . . . Congratulations on the success of Children's Dental Health Week were sent to the Association by the National Dairy Council in March.

Dental Societies

SIX EASTERN SOCIETIES CONFER ON LABOR PROGRAMS

Organized dentistry's role in the establishment of welfare fund dental care programs was the subject of an April meeting of six eastern dental societies. The regional conference, held in conjunction with the annual meeting of the New Jersey State Dental Association April 18-20 in Atlantic City, N. J., was attended by representatives of the New Jersey, Delaware, Maryland, New York, Pennsylvania and the District of Columbia societies.

The regional conference was called in recognition of the fact that a single dental care program often covers more than one state and that because of this it would be desirable for several societies to coordinate their activities. Such regional cooperation has been recommended by the American Dental Association Council on Dental Health.

Participating in the meeting were members of state councils on dental health and members of special committees set up to represent their societies in negotiations with labor union representatives. R. H. Friedrich, secretary of the American Dental Association Council on Dental Health, represented the Association.

EXPECT OVER 800 GUESTS AT HAWAII-CALIFORNIA MEETING

With more than 800 visitors expected in Honolulu for the Hawaii-California Dental Meeting June 13-18, the Hawaii Territorial Dental Society will be host to one of the largest dental gatherings ever assembled in the Territory. The meeting has been planned jointly by the Hawaii dental society and the California State Dental Association.

Meeting headquarters will be at the Reef Hotel on the beach at Waikiki. A visual education program, clinics and essays are planned. The social program

The appreciation of the Korean dental school for aid given by American dentistry was expressed at the March 24-26 meeting of the Washington State Dental Association. An inlaid jeweled box was given to Daniel F. Lynch, president of the American Dental Association, by Myung Jin Park, dean of the Korean Dental School. Shown (l. to r.) are: Fred S. Shandley, past president of the Washington State Dental Association; Berton Anderson, acting dean of the School of Dentistry, Washington University; Dr. Lynch; Dean Park; W. A. Moline, state society president, Moon Ho Cha, faculty member of the Korean Dental School, and John A. Moore, dental counselor, American-Korean Foundation.

The Arkansas State Dental Association reports that its April 3-6 meeting in Little Rock, Ark., was the largest meeting in the Association's history. Among dental executives at the meeting were (l. to r.): Don Hamm, secretary-treasurer; Daniel F. Lynch, president of the American Dental Association; W. R. Alstadt, Association Trustee for the Twelfth District, and Don Harkey, incoming president of the state society.

includes a dinner show, president's reception, ladies' luncheon and fashion show. A feature of the social program will be the luau, a Hawaiian-style feast.

Featured speakers are Daniel F. Lynch, president of the American Dental Association; Harold Hillenbrand, Association secretary; John R. Abel, thirteenth district trustee, and Herbert Bain, director of the Bureau of Public Information. Among the educators on the program are John Tocchini, dean of the School of Dentistry, College of Physicians and Surgeons, and Willard C. Fleming, dean of the College of Dentistry, University of California.

DENTAL PRACTICE ACTS IMPROVED BY SOCIETY ACTION

The work of two dental societies, the West Virginia State Dental Society and the Arkansas State Dental Association, bore fruit recently when the governors of both states signed into law improvements in the state dental practice acts.

The new law in West Virginia increases the penalties for the unauthorized practice of dentistry, provides for temporary licensure of dental interns, authorizes the board of dental examiners to establish higher standards for those who wish to be recognized as specialists and initiates yearly reregistration of dentists and dental hygienists. In addition, the act redefines the scope of practice for dental hygienists and allows dentists to sign death certificates.

The revised dental practice act was piloted through the state legislature by James B. Poindexter and Raymond J. Vasser, chairman and member respectively of the dental society's legislative committee. Both men are members of the state legislature.

The newly amended Arkansas dental practice act contains among other provisions two relating to the unauthorized practice of dentistry. These provisions make it illegal for an unlicensed person to advertise to the public that he will perform dental operations or sell dental prosthetic appliances to persons other than dentists.

SPENADEL FUND TO MAKE EDUCATION GRANTS

The Henry Spenadel Fund for Advancement of Education in Dentistry invites applications for grants for dental research and education, announces Isidore Teich, secretary of the First District Dental Society of New York and chairman of the fund committee. In addition to making gifts or loans for dental research and other projects for the advancement of education in dentistry, the Fund makes loans for tuition and school expenses to New York dental students who have completed two years of study toward their dental degree.

Henry Spenadel, creator of the fund, was an active member of the First District Dental Society for nearly half a century. Dr. Spenadel provided in his will that more than half the income from

Healthy Tooth City was on display at the Eastman Dental Dispensary, Rochester, N. Y., during Children's Dental Health Week February 7-13. An electric train, supervised by Virginia Ritter, executive director of the Rochester Dairy Council, ran around the city, through the Professional Attention Section, the Personal Care Region and the Good Food Area. A tower dispensing fluoridated water helped a health officer clean up the slums in the State of Decay. The dental fair held at the dispensary was sponsored by the Rochester Dental Society.

his estate be used to advance dentistry. Information on awards may be obtained from the First District Dental Society of New York, Hotel Statler, New York 1.

RESPONSE HIGH TO CHICAGO POSTPAYMENT PLAN

In the first week after the Chicago Dental Society announced its Dental Budget Plan, 728 members asked to participate. The postpayment plan, which is scheduled to begin May 1, is open to all members of the Chicago Dental Society.

The plan works as follows. The dentist signs an agreement of participation with the First National Bank of Chicago. The agreement is accredited by the dental society. The patient's note is made out to the dentist, who then signs the note over to the bank and receives payment less 4 per cent. The amount withheld is set aside in the name of the Chicago Dental Society as a reserve for losses. Neither patient nor dentist need go to the bank. The transaction can be handled over the telephone and the note signed in the dentist's office.

The patient with a fee to pay of $100 or more may pay the bank over an 18 month period. Fees over $300 usually may be paid over a 24 month period.

HONOLULU SOCIETY PLANS PAN-PACIFIC CONFERENCE

A pan-Pacific dental conference to be held October 24 and 25 in Honolulu is being planned by the Honolulu County Dental Society. Arrangements for the meeting, which will follow the American Dental Association's 96th annual session, are under the direction of Floyd A. Sandberg, 280 Lewers Rd., Honolulu. Robert C. Sample is program chairman. Persons interested in presenting clinics at the meeting are asked to write Dr. Sandburg. Invitations will be extended to the dental associations in Australia, New Zealand, Japan and the Philippines.

SUBSCRIPTS • Arizona has become the 38th constituent society to publish its own journal. *The Arizona Dental Journal* appeared in March and will appear twice more during 1955. William H. Telford, state society president, states that a bi-monthly journal is the publication goal. R. K. Trueblood is chairman of the publishing board. . . . A testimonial dinner honoring William A. Fennelly, president of the Dental Society of the State of New York, will be held May 14 at the Hotel Plaza in New York. The dinner is sponsored by the First District Dental Society.

Dental Education

IOWA EXPANDS FACILITIES FOR DENTAL CARE OF HANDICAPPED

The State University of Iowa's program of dental care for mentally and physically handicapped children has been expanded, according to a recent announcement of the University's College of Dentistry. Expansion has been made possible through the opening of new facilities in the Iowa Hospital School for Severely Handicapped Children.

The program serves both a training and a service function. Graduate training in the management and oral rehabilitation of the handicapped child is offered by the staff of the dental service, which is composed of members of the department of pedodontics at the dental school. Kenneth E. Wessels, head of the department, directs the program.

BALTIMORE COLLEGE RECEIVES FIRST ENDOWED SCHOLARSHIP

The Baltimore College of Dental Surgery of the University of Maryland received its first endowed scholarship recently. The scholarship has been arranged by Mrs. E. Benton Taylor and will be continued by the Luther B. Benton Co. of Baltimore. The scholarship is given in honor of the firm's past owner, E. Benton Taylor, who passed away in November 1953.

SCHOOL HONORS DENTISTS FOR OUTSTANDING SERVICE

Three dentists were among 58 alumni honored recently by Washington University in St. Louis. Otto W. Brandhorst of St. Louis; Benno Edward Lischer of Webster Groves, Mo., and Edgar Hayden Keys of St. Louis were cited at the University's Second Century Convocation February 21 for outstanding achievement and service. The convocation marked the beginning of a second century of the school's existence.

Dr. Brandhorst, dean emeritus of the School of Dentistry, is executive secretary of the American College of Dentists. Dr. Lischer, also dean emeritus of the dental school, is a former president of the American Association of Dental Schools. Dr. Keys is a former vice-president of the American College of Dentists.

ISAAC SCHOUR NAMED DEAN OF ILLINOIS DENTAL SCHOOL

The appointment of Isaac Schour as dean of the University of Illinois College of Dentistry was approved March 30 by the university's board of trustees. He will succeed Allan G. Brodie, who asked to be relieved of his duties to devote his time to research. Dr. Schour's appointment is effective September 1.

Isaac Schour

Prior to the appointment as dean, Dr. Schour was head of the department of oral histology and associate dean in charge of postgraduate studies. An outstanding man in his field, he is coauthor of a number of textbooks and has contributed chapters to the books of other

writers in dentistry. In addition, Dr. Schour has published over 200 research reports in leading dental, medical and physical science journals.

Dr. Schour holds D.D.S. and M.S. degrees from the University of Illinois and a Ph.D. from the University of Chicago. In addition, he holds an honorary degree of Doctor of Science from Washington University in St. Louis.

Dr. Schour is a past president of the International Association for Dental Research and is a member also of several other scientific organizations.

SCHOOLS SCHEDULE GRADUATE COURSES

Alabama • Louis Alexander Cohn of New York will present a postgraduate refresher course in diagnosis and treatment of deformities of occlusion June 3-5 at the University of Alabama School of Dentistry in Birmingham, Ala. Special emphasis will be placed on selective grinding.

Indiana • June 14-16 are the dates of a postgraduate course in direct technics for inlays and fixed bridges at the Indiana University School of Dentistry in Indianapolis. Attendance is limited. Further information on the course may be obtained from the office of the dean.

Iowa • Endodontics will be the subject of a one day course at the State University of Iowa in Iowa City June 11. Erling Thoen, of Iowa City, will preside and will moderate a question and answer panel following papers by seven essayists.

North Carolina • The University of North Carolina School of Dentistry in Chapel Hill has scheduled two postgraduate courses in pedodontics during July. The first, operative dentistry and diagnosis, will be taught July 11-15; the second, emphasizing fixed and removable prosthesis and treatment of fractured anterior teeth, is scheduled July 18-22.

Public Health

FRANK McCLURE, LLOYD BLAUCH HONORED BY GOVERNMENT

Two men who have made significant contributions to dentistry were honored April 11 by the Department of Health, Education and Welfare. They are Frank J. McClure, Ph.D., chief of the Laboratory of Oral Biochemistry at the National Institute of Dental Research, and Lloyd E. Blauch, Ph.D., educator.

F. J. McClure

Dr. McClure was recognized for his outstanding contributions in the study of fluorine metabolism and its role in the prevention of dental caries. This work, internationally known, helped provide the basic knowledge that fluoridation was a safe public health procedure. A few years ago the American Dental Society of Europe elected Dr. McClure an honorary member in recognition of his valued contributions to dental research.

Dr. Blauch was cited by the Department of Health, Education and Welfare for "his meritorious contributions to the advancement of higher education for the health professions." He is chairman of the committee on teaching of the American Association of Dental Schools, a former executive secretary of its curriculum com-

William L. Hutton, M.D., medical officer of Brantford, Ont. (right), was honored March 9 for his pioneering leadership in public health. Mayor Reg Cooper, who called Dr. Hutton "Brantford's man of the year 1954," is seen presenting Dr. and Mrs. Hutton with an inscribed silver tray. The presentation was made during the annual meeting of the Brantford Fluorine Committee.

mittee and is a member of the American College of Dentists (committee on research). He is one of the two nondentists who are members of the American Association of Dental Examiners. (The other is Shailer Peterson, secretary of the American Dental Association's Council on Dental Education.)

FLUORIDATION WINS IN THREE COURT DECISIONS

Three decisions favorable to fluoridation were handed down recently. Courts in Wisconsin, Pennsylvania and Indiana have ruled for the health measure. In the case of *Genkinger v. City of New Castle Water Company,* the Court of Common Pleas of Lawrence County, Pa., ruled that when a water company has received authorization from a municipality and has obtained a permit from the department of health it may add fluorides to the water it sells. It was the first time that a private water authority was directly involved in a fluoridation suit.

The Supreme Court of the State of Wisconsin in the case of *Froncek v. City of Milwaukee* upheld a lower court decision stating that the city of Milwaukee was within its constitutional rights to institute the health measure, and in Indiana, the Marshall Circuit Court ruled for the city of LaPorte when it sustained a city objection to an injunction complaint.

SUBSCRIPTS • Fluoridation projects began recently in Lexington Park, Md. (population 5,000) and in Bangor, Me. (population 31,550). Initiation of the procedure in Bangor followed a successful referendum. In addition, the city council of Santa Fe, N. Mex. (population 28,000) voted March 30 for fluoridation. The vote followed a public meeting and testimony by proponents and opponents of the measure. . . . Arthur Bushel, former assistant director of the Bureau of Dental Health of the New York State Department of Health, was named director of the Bureau of Dentistry of the New York City Department of Health, it was announced March 17. He succeeds the late Harry Strusser. . . . In Dubuque, Iowa, which has been fluoridating its water supply since 1952, dental examinations of five year olds showed 50 per cent less teeth decayed, missing or filled than in the same age group in 1951.

Research

REAPPOINT COLONEL BERNIER HEAD OF ADVISORY COMMITTEE

Col. Joseph L. Bernier has been reappointed to the chairmanship of the Dental Research Advisory Committee, Research and Development Division, Office of the Army Surgeon General, it was announced March 15. The appointment was made by Maj. Gen. George E. Arm-

strong, Army Surgeon General. The advisory committee counsels the Army surgeon general's office on dental research carried on within the Department of the Army and on the support of civilian dental research.

Reconstitution of the committee has brought four new appointees to the ten man group. The newcomers are Lt. Col. William V. Hill, who replaces Col. Clare Budge; Maj. Robert W. Hobson, replacing the late Lt. Col. Douglas M. Beebe; William R. Mann, replacing George C. Paffenbarger, and James Roy Blayney, replacing Robert G. Kesel.

Holdover members in addition to Colonel Bernier are: Lt. Col. George W. Burnett, Col. Thomas A. McFall, Joseph L. T. Appleton, Wallace D. Armstrong, M.D., and Thomas J. Hill.

National Defense

WALTER REED SEEKS DENTISTS FOR NEW POSITIONS

Walter Reed Hospital in Washington, D. C., announces openings for two dentists to practice at Walter Reed under civil service status. The positions are newly created and are permanent. Appointees will service hospital patients and their dependents. The salary is $5,940 a year, the job has a civil service grade of GS-11, and the following requirements: applicant must have a degree in dentistry, a license to practice and one year's experience. Further information may be obtained from the Office of Civilian Personnel at the hospital.

DENTISTS IN RURAL AREAS MAY FORM OWN ARMY CLASSES

A recent regulation issued by the chief of the Army field forces in Fort Monroe, Va., makes it possible for dentists who are officers in the Army Medical Service Reserve and who live in rural or isolated areas to form their own classes in military medicine. Retirement points are given for participation in such training programs. The regulation urged Army commanders to organize training units in their areas when five or more reservists of each corps are available for specialized study. Instructional material will be supplied by the Army Medical Service Graduate School.

SUBSCRIPTS • In response to requests from dental societies for films on the treatment of bodily injuries, the Federal Civil Defense Administration has secured release from the Navy of seven suitable films, announces R. W. Bunting, dental consultant. The films may be obtained

The American Spirit Honor Medal and certificates were presented to Louis A. Zurcher, Jr., (SR) of San Francisco by C. Stanley Rice, guest of honor at the March 12 Recruit Brigade Review of the U. S. Naval Training Center in San Diego. Dr. Rice is president of the American Society of Oral Surgeons. Watching the presentation are [l. to r.]: Capt. Merritt J. Crawford (DC), senior dental officer, and Capt. H. J. Campbell, commanding officer of the recruit training command. The medal is awarded to the outstanding recruit of the graduating companies.

The 44th anniversary of the Army Dental Corps was celebrated March 3 with a dinner-dance at the U.S. Army Hospital in Heidelberg, Germany. Shown (l. to r.) are: Maj. Gen. and Mrs. Joseph Martin; Col. and Mrs. Leland G. Meder, Col. and Mrs. Charles F. McNair, Mrs. Charles Spellman, Mrs. Chester K. Ramage, Maj. Madeleine Ullom and Col. and Mrs. Willard L. Nielsen. Partially hidden from view are Col. Spellman and Lt. Col. Ramage. Dental officers and German dentists and their guests from all parts of the headquarters area command attended.

from the Audio Visual Training Section, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C. . . . New dental standards have been established for applicants seeking appointment to certain Navy and Marine Corps officer training programs. Civilian dentists who treat such applicants may obtain the revised standards from the office of Rear Admiral Ralph W. Malone, chief, dental division, Bureau of Medicine and Surgery, Washington, D. C.

International

PANAMA DENTISTS ELECT OFFICERS AND TRUSTEES

The Asociacion Odontologica Panamena has announced the election of its officers and board of trustees. They are Jaime Díaz, president; Gerónimo Garcia, vice-president; Omar Rodriguez, secretary; Alfredo H. Berguido G., treasurer; Eneas Quintero, press and propaganda secretary; Luis C. Alemán, social and cultural secretary, and Pedro Brin, technical adviser.

MAY MEETING SCHEDULED FOR CARIES RESEARCH GROUP

Researchers from many countries will take part in the second annual meeting of the European Association for Research on Fluoridation and Caries Control May 15-19 in Geneva, Switzerland. Among the countries represented are Germany, France, Yugoslavia, Austria, Italy, Hungary, Turkey and Sweden. The program will include papers on new tools in medical and dental research, the fluorine-iodine relationship, clinical studies of fluorine concentrations in water, urine, blood and milk and technical problems in water fluoridation.

Further information on the meeting may be obtained from the College of Dentistry, University of Geneva, rue Micheli-du-Crest 24, Geneva, Switzerland.

F.D.I. AND GREEK SOCIETY PLAN SEPTEMBER ATHENS MEETINGS

Four major subjects will be discussed at the September 25-30 meeting in Athens of the Stomatolcgical Society of Greece. The Panhellenic Congress will consider social dentistry, pedodontics, periodontal diseases and root canal therapy. To help make the Congress an international event the Fédération Dentaire Internationale is holding a special meeting in Athens the same week.

The Greek society has planned two tours between Venice and Athens for international guests. The first tour will precede and the second follow the Congress. Information on the meeting and tour may be obtained from B. Stefanopoulos-Vrettos, president of the Stomatological Society of Greece, 71 Skoufa St., Athens.

SUBSCRIPTS • The Dental Implant Society of Great Britain is anxious to contact dentists with experience in implant denture technic for an exchange of ideas, announces F. B. Trainin, society chairman. Interested dentists may write the society at 109 Harley St., London W. 1.

General

HEALTH CAREERS OUTLINED IN BOOKS FOR TEEN-AGERS

Careers for young people in the health sciences are described in two new publications of the National Health Council. *Partners for Health* and *Health Careers Guidebook* describe 156 different health occupations, from administrator of health services and anesthetist to dentist and zoologist. In addition to describing the individual occupations, the books describe the vast range of the health sciences, give suggestions on how to choose a health career and tell where further job information may be obtained. Pictures of health workers in action accompany the text.

Designed primarily as a counseling tool, the books will be distributed free of charge early this spring to all secondary school principals and vocational advisers in the junior colleges. Some seven and a half million teen-age students will be reached by the natjonwide distribution. Publication of the books was supported by the Equitable Life Assurance Society of New York.

JOSEPH BERNIER HEADS BOARD OF ORAL PATHOLOGY

Col. Joseph L. Bernier was elected president of the American Board of Oral Pathology at its recent meeting in Chicago. Elected vice-president was Hamilton B. G. Robinson. Donald A. Kerr is secretary-treasurer. The next examination for certification by the American Board of Oral Pathology will be held at the Armed

Television has proved an effective method for the teaching of dentistry. A brochure on educational TV has been prepared for use in dentists' waiting rooms by the National Citizens Committee for Educational Television. Copies may be obtained from the committee, Ring Bldg., 1200 18 St., N.W., Washington 6, D. C.

Participating in a National Health Council forum on fluoridation recently were (l. to r.): Al Schottelkotte of the Cincinnati Enquirer; Herbert B. Bain, director of the Association's Bureau of Public Information; J. Roy Doty, secretary of the Association's Council on Dental Therapeutics and John W. Knutson, chief dental officer of the U. S. Public Health Service, who served as moderator. Not shown is Rudolph H. Friedrich, secretary of the Association's Council on Dental Health, who was panel reporter.

Forces Institute of Pathology in Washington, D. C., December 11. Information on the examination may be obtained from Dr. Kerr, University of Michigan School of Dentistry, Ann Arbor, Mich.

COMMUNITY MUST ACT FOR FLUORIDATION, PANEL SAYS

Achieving fluoridation of the public water supply is the responsibility of the entire community, not that of the dentists, physicians or health agencies alone. This conclusion was drawn by a panel at the National Health Forum March 23-25 in New York. The forum was part of the National Health Council's annual meeting.

Forum participants were J. Roy Doty, secretary of the American Dental Association's Council on Dental Therapeutics; Mr. Herbert B. Bain, director of the Association's Bureau of Public Information; Rudolph H. Friedrich, secretary of the Association's Council on Dental Health, and Mr. Al Schottelkotte of Cincinnati, reporter-columnist of the *Cincinnati Enquirer* and author of a widely read series of articles on fluoridation. John W. Knutson, chief dental officer of the U. S. Public Health Service, served as moderator.

The conferees pointed to the overwhelmingly conclusive scientific evidence on the benefits and safety of fluoridation. The opposition was likened to the old-time medicine men who exploited lack of understanding to create fear and hysteria. It was pointed out that where community groups have organized well planned campaigns in support of the program, fluoridation has succeeded.

At a meeting of National Health Council delegates the day after the panel, Dr. Friedrich was elected to the Council's board of directors. He succeeds Harold Hillenbrand, Association secretary, whose term was completed.

INFORMATION REQUESTED ON CHARLES HENRY LAND

Historical data for use in a biography of Charles Henry Land has been requested by L. Laszlo Schwartz of the Columbia University dental school in New York. Dr. Land, known for his work on the porcelain jacket crown, lived from 1847 to 1922. He was the grandfather of General Charles A. Lindbergh.

TOUR ANNOUNCED FOR SAN FRANCISCO SESSION

A chance to see some of the West, including Glacier National Park, Seattle, Portland, the Columbia River Highway, Mt. Hood National Forest and the famed

redwood forests, is offered by the Carrick Travel Bureau. A tour to San Francisco is planned for the time of the Association's 96th annual session. The tour will leave Chicago via the Great Northern railroad October 5 and will arrive in San Francisco October 12 in time for preconvention meetings. The return trip begins October 21; Chicago arrival is October 29.

In addition to this tour, an extension tour to Hawaii is being planned. Leaving San Francisco by plane October 20, the group will spend 12 days in the Islands. The return trip to Los Angeles will be by boat. Further information may be obtained from C. W. Carrick, Oberlin, Ohio.

A Hawaiian holiday and a California train trip are offered in two tours planned by the Chicago Dental Society. The Hawaiian trip begins when the Association convention ends. Tour members will fly to Honolulu, spend two weeks visiting the islands, and return to the mainland on the S.S. Lurline, which docks in Los Angeles November 5.

Daniel F. Lynch, president of the American Dental Association, is shown receiving a medallion for his outstanding work in dentistry. The medal was presented to Dr. Lynch by Edwin C. Pound (right), chairman of the Thomas P. Hinman Dental Clinic held in Atlanta, Ga., March 20-23. Dr. Lynch addressed the opening session.

The California train trip includes vista dome views of the Colorado Rockies and Feather River Canyon, as well as an overnight stop in the Yosemite Valley, motor sightseeing in the Los Angeles area and a full day at the Grand Canyon in Arizona.

Information on these tours may be obtained from B. Placek, transportation manager, 1545 W. Division St., Chicago 22.

COLER HOSPITAL OFFERS INTERNSHIPS, RESIDENCY

Two rotating internships and one residency in prosthetics beginning July 1 are available at Bird S. Coler Hospital and Home on Welfare Island, New York. The Hospital, a chronic disease institution, is affiliated with the New York Medical College for the training of undergraduate students. The annual stipend for interns is $855; for residents, $1,885. Room, board, uniforms and laundry are supplied. Application forms may be obtained from the medical superintendent.

HARRY J. HEALEY TO HEAD ENDODONTISTS' ASSOCIATION

Harry J. Healey of Indianapolis was installed as president of the American Association of Endodontists at the group's meeting in Chicago February 5 and 6. Others who took office in February were John R. Pear, president-elect; G. C. Hare, vice-president; V. B. Milas, secretary; George Stewart, treasurer, and Victor H. Dietz, editor.

WASHINGTON CHILDREN'S HOSPITAL OFFERS INTERNSHIP

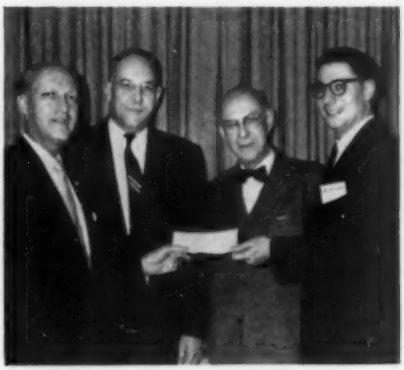
The Children's Hospital of Washington, D.C., is offering a one year internship in pedodontics beginning July 1. Included in the training program will be operative dentistry, orthodontics, oral surgery, oral

medicine and anesthesiology. Teaching will be by the lecture and chairside method. Further information may be obtained from Harold N. Greenberg, director of the hospital's dental department.

DENTIST HELPS DEVELOP MAGNETIC EYE

A dentist, Donald F. Gearhart, and a physician, Everett H. Tomb, have developed an artificial eye, operated by magnets, the Veterans Administration announced March 17. Dr. Gearhart is chief of the plastic eye and restorations clinic at the Boston VA hospital. Dr. Tomb is chief of the hospital's eye, ear, nose and throat section.

The magnetic eye can move and even twinkle as effectively as the living eye it matches, according to the VA's announcement. It has already been implanted into the eye socket of more than 150 veterans whose eyes have suffered injury or disease.



Chosen winner from among 63 contestants in the American Denture Society essay contest was Robert H. Sacherman, a June 1954 graduate of Western Reserve University (right). Dr. Sacherman's prize-winning essay, written when he was a senior student, is entitled "Full Denture Prosthesis for a Case of Acromegaly." Presenting the award to Dr. Sacherman at a recent Cleveland Dental Society meeting were (l .to r.): Samuel S. Cohen, president-elect of the American Denture Society; John S. Millis, president of Western Reserve University, and W. L. Wylie, dean of the university's School of Dentistry.

Also • The public spent an estimated $155,700,000 for dentifrices in 1954, according to figures reported early in April by *Tide* magazine. The 1954 sum was a 73.4 per cent increase over the amount reported for 1947, seven years ago. . . . Western Reserve University Dental Alumni Day will be held May 18 at the dental school in Cleveland. . . . May 20-22 are the dates of the 1955 convention of Sigma Epsilon Delta. The convention will be held at Lake Sackett, Monticello, N. Y. Reservations may be made by writing Leon Brenner, 2919 Richmond St., Philadelphia. . . . Among October meetings in San Francisco will be that of the American Society of Dentistry for Children. Closed circuit television broadcasts are a feature of the October 14-16 meeting. Charles A. Sweet, Jr., is general chairman. Irwin Beechen is program chairman. . . . Also meeting in San Francisco in October is the American Dental Assistants Certification Board. The dates are October 16-20, during which time a certification examination will be held. Those interested in taking the examination may write to Anna Carey, secretary-treasurer, 601 National Bank Bldg., Lima, Ohio.

Current Literature

A FIVE YEAR REPORT ON THE EFFECT OF TOPICAL APPLICATIONS OF SODIUM FLUORIDE ON DENTAL CARIES EXPERIENCE

Arvid Syrrist and Kjell Karlsen. Brit. D. J. 97:1 July 1954.

The object of this investigation was to evaluate the duration of the caries-inhibiting effect produced by the topical application of sodium fluoride. Children aged 12 from the elementary schools of Oslo, Norway, were selected in 1947 for the study. Data was utilized only from the 91 children who were observed through the entire five year study.

One upper quadrant of the mouth served as the control region; the other quadrant was treated with a 2 per cent solution of sodium fluoride. The upper quadrants included the incisors, cuspids and bicuspids. The permanent molars were excluded as most of them were already carious. Prior to the initial fluoride treatment both quadrants were cleaned with a paste of pumice and hydrogen peroxide. The interproximal surfaces were cleaned with paste and linen thread.

The teeth in the test quadrant were isolated with cotton rolls, swabbed with 60 per cent alcohol and dried with hot air. The teeth were then kept wet with 2 per cent sodium fluoride for a period of seven to eight minutes. The fluoride solution was worked into the interproximal areas with linen thread. During the first two years of the study the children received a series of seven applications of sodium fluoride.

A clinical examination utilizing a dental mirror, probe and air syringe was made immediately prior to the initial fluoride application. Subsequent examinations took place at yearly intervals. A surface was considered carious if there was a definite break in the surface continuity as detectable by a sharp exploring tine.

During the treatment period, 1947-1949, the relative percentage difference between the rates in new DF (decayed and filled) surfaces in untreated and treated quadrants was 47 per cent. The relative percentage difference in the three year posttreatment period, 1949-1952, is 11 per cent less caries in the treated quadrant. The over-all reduction in the incidence of caries for the five year study was 21 per cent.

It was observed also that there was a 50 per cent greater reduction during the treatment period in caries experience in the teeth which were noncarious prior to the study than in teeth which had been carious. However, during the three year posttreatment period this difference was only 15 per cent.

An interesting variability in the response to treatment was observed also. In 43 children the treatment had a beneficial effect, showing a saving of 109 DF tooth surfaces. Fifteen children developed 28 more DF surfaces in the treated than in untreated teeth while the teeth of the remaining 33 children showed no response to sodium fluoride treatment.

Norman H. Olsen

CHANGES IN DENTAL HYPOPLASIA AND CARIES AMONG THE CHILDREN OF FINNISH LAPPS 1939-1950

R. V. Holmes Jones and M. J. Mynott. Brit. M.J. March 20, 1954, p. 682.

In 1939 a survey was made by H. Mellanby of the dental health of children of Finnish Lapps. Thirteen years later the present survey was undertaken, and its results compared with those of the earlier study to determine whether wartime living conditions were reflected in alterations of tooth structure or in the susceptibility to caries. Only the deciduous teeth of Lapp children between the ages of 2 and 14 years were examined.

The average hypoplasia score and the average caries score were determined. A definite decrease was found in the incidence and extent of caries from the 1939 study to the present one. This change occurred almost entirely in the 6 to 9 year age group.

Comparison with the 1939 scores demonstrates also that the percentage of hypoplastic teeth which were carious was significantly lower in 1950 than in 1939.

Staple foods in the 1939 diet were reindeer meat, dried fish, potatoes, rye bread and margarine. The universal drink was coffee, sweetened with sugar. Little fresh fruit was eaten.

From 1941 to 1944, during the German occupation, the Lapps lived on a diet containing more sugar, cereals and potatoes but much less meat and fish than in 1939.

From 1944 to 1948, as a result of the scorched "earth policy of the Germans, the Lapps were forced to exist for a year on a subsistence diet and for three years on a diet

of fish, meat and food supplied by philanthropic organizations. Since 1948 the diet has been reverting to the 1939 pattern, although the Lapps now seem more conscious of the value of eating fresh fruit.

The changes found agree with other wartime studies and provide additional evidence of the value of eating more fresh foods and less foods containing fermentable carbohydrates.

Joseph F. Burket

DENTAL STRUCTURE AND CARIES IN 5-YEAR-OLD CHILDREN ATTENDING L.C.C. SCHOOLS

May Mellanby and Helen Mellanby. Brit. M.J. 32:944 Oct. 23, 1954.

Studies were made of the dental structure and caries experience of 692 children in 1949 and 1,395 children in 1951. Each of the children examined had reached his fifth but not his sixth birthday. The method of examination and the standards used were presented in a previous publication.

The proportion of children whose teeth were caries-free varied little from 1949 (23.5 per cent) to 1951 (24.9 per cent).

As a group the upper teeth showed more moderate hypoplasia than did the lower teeth, and in all of the teeth there was a low incidence of gross hypoplasia as compared to moderate hypoplasia. The lower incisors showed the lowest amount of hypoplasia.

Observations of the individual teeth were similar for the 1949 and 1951 surveys. In each survey over 70 per cent of the teeth were free from caries. The percentage of teeth found to be carious was slightly higher in 1951 (27.5 per cent) than in 1949 (26.7 per cent), but the difference was not significant. The teeth least affected were the lower molars. There appears to be a relationship between the presence of structural defects and the incidence of caries. When hypoplasia increases, the incidence of caries increases.

There appears to be a tendency to attempt to fill more teeth than has been noted in previous surveys, and this manifestation seems to be a step in the right direction.

Types of stain were noted in the examination of these children. There was a lower incidence of caries in those teeth in which black or dark brown stains were noted. Teeth with green stains tended to have a higher incidence of caries than those in which no staining was found.

Roy L. Lindahl

SHOULD FLUORIDES BE ADDED TO PUBLIC WATER SUPPLIES?

James H. Shaw. Scient. Monthly. 79:232 Oct. 1954.

What are the fluorides and where are they found? Is the ingestion of fluorides beneficial? Is the prolonged ingestion of fluorides at low levels toxic? Can fluorides be introduced accurately into water supplies? Can fluorides be used safely and effectively in any other way?

An examination of the scientifically substantiated facts pertaining to each of these questions shows that (1) our bodies routinely metabolize small amounts of inorganic fluoride that are present in all our foods, (2) the ingestion of an optimum amount of inorganic fluorides during tooth development results in a 50 per cent lower incidence of tooth decay through adolescence and adult life, (3) the consumption of this amount of fluorides does not result in any toxic manifestations even after long periods, (4) the fluorides can be as accurately introduced in water by men as by nature and (5) there is presently no method of supplying fluoride to the teeth that is as safe and effective as fluoridation.

Until four years ago the author among others thought "that we should patiently wait for, and energetically encourage, the accumulation of additional facts, both on the potential beneficial influence and the possible toxic manifestations of fluoridation in the survey areas. In my opinion, these facts have become available in an incontrovertible fashion during this period. I believe that, beyond the shadow of a doubt, we can conclude that fluoridation is both effective and safe."

Additional research is needed to discover other ways to combat dental caries, not for the purpose of replacing fluoridation, but rather to increase its effectiveness.

H. Trendley Dean

TREATMENT OF CHRONIC OSTEOMYELITIS WITH STREPTOKINASE-STREPTODORNASE: REPORT OF CASE

Frederick C. Nichols and Thorpe Vande-Mark. J. Oral Surg. 12:334 Oct. 1954.

Some of the by-products of the growth of beta hemolytic streptococci have been found to be effective in the treatment of various acute and chronic infectious processes. These preparations, which contain the catalytic agent streptokinase and an enzymatic complex called streptodornase, are effective in liquefying clotted blood and in lowering the viscosity of thick, purulent exudates. Some of

the conditions in which the agents are of value include hemothorax, empyema, osteomyelitis, chronic surface ulcers and chronic maxillary sinusitis.

Best results are obtained when the enzymes are brought into close contact with the diseased tissues and when subsequent removal of the degradation products is as complete as possible. The enzymes are not specific curative agents but are to be used in addition to the other modes of therapy that are of proved value for the specific case at hand.

A case is described in which the usual treatment of chronic osteomyelitis of the maxilla failed to resolve the process over a period of four months. Irrigation of the bony defect with a solution containing 5,000 units of streptokinase and 1,250 units of streptodornase per cubic centimeter was provided initially.

The defect was then loosely packed with a gauze wick saturated with a solution of the same concentration of the drug. The wick was changed frequently during the first few hours, then every six hours for the next 24, then discontinued entirely. Within five days the defect was healed and completely covered by normal mucosa. There was no evidence of further discharge after the use of the enzymes and no return of symptoms during the following seven months.

The results obtained in this case and those obtained by other workers, indicate that the enzymatic agent streptokinase-streptodornase may be a valuable aid in treating chronic suppurative processes encountered in oral surgery and other fields.

TEACHING PUBLIC HEALTH TO DENTAL STUDENTS

D. M. Hadjamarkos. Am. J. Pub. Health 44:1352 Oct. 1954.

Most dental schools in recent years have given more attention to the study of public health in their curriculum.

A survey shows that of the dental schools that replied to a questionnaire, 30 include a separate public health course on this subject. Most schools present lectures combining general and dental public health topics; a few give separate lecture courses. Of the 30 schools, the minimum number of lecture hours given in public health is eight and maximum number 51. There is wide variation among the schools as to the number of lecture hours devoted to general public health and to dental public health. A dentist conducts the course in public health in the majority of schools, and in most instances he has a degree in public health. Lectures on general public health topics are presented by the teacher in charge or by specialists.

The survey indicates that although most dental schools recognize the value of a public health course in the dental curriculum, the problems related to the proper place of such a course in the curriculum as well as the problems of the contents of this course have not been solved as yet.

William A. Nolte

A COMPILATION OF EPIDEMIOLOGIC STUDIES IN DENTAL CARIES

Maury Massler, J. J. Pindborg and Clive Mohammed. Am. J. Pub. Health 44:1357 Oct. 1954.

The purpose of the investigation was to bring together and to analyze all available studies on the epidemiology of dental caries. All data were derived from the literature.

A compilation of data from different parts of the world reveals that the caries attack rate may vary from very high to very low, from very high in Denmark and New Zealand to very low in India. The caries attack rate in the United States is midway between the two extremes.

A graphic presentation shows that the trend in dental caries attack rates in permanent teeth follows an S-shaped pattern. The trend in dental caries attack rates in deciduous teeth also follows a definite pattern. The parallelism among the graph curves for deciduous teeth and also among the graph curves for permanent teeth suggests a channel system. This system is considered in the study of expected caries attack rates in persons with different degrees of caries susceptibilities.

William A. Nolte

Book Reviews

FLUORIDATION AS A PUBLIC HEALTH MEASURE

Edited by James H. Shaw. 232 pages with illustrations. Index. Price $4.50. Washington, D. C., American Association for the Advancement of Science, 1954.

This is the third monograph pertaining to fluorine and dental health published by the AAAS. Eleven chapters written by 21 individuals cover areas of major interest in the current use of fluoride for the control of dental caries. The introductory chapter reviews briefly the dental benefits of waters bearing fluorides naturally, and cites the accumulating evidence of similar benefits from water fluoridation.

The authors discuss the proposition that adjustments of water-fluoride concentrations seasonally as well as climatologically may be advisable for optimum dental health benefits. This idea, however, may not be entirely consonant with epidemiological data on the effects of fluorine. As yet little is known regarding the mechanism by which fluorine inhibits caries.

Five chapters cope with the question of nondental effects of fluoridated water. Absurd and unsubstantiated claims of toxic effects of fluoride are put in proper perspective. The major effects of fluorine on bones and teeth are reviewed exhaustively. Special emphasis is placed on the factors of safety which exist. As presented in one chapter, medical studies of a human population exposed for many years to the inordinately high level of 8 ppm of fluorine in the communal water supply produced evidence of dental fluorosis. There were no observations which would deter the use of fluoridated drinking water.

Similarly, studies on a population now drinking fluoridated water have produced no evidence of toxic effects. A lengthy chapter discusses two dominant features of fluorine metabolism; the retention of fluorine in skeletal and dental tissues and the urinary elimination of fluorine. The latter efficiently prevents cumulative fluorosis.

There is no assurance at present that any other "fluoridated food item" can supplant drinking water as a carrier of fluoride, which means that under present conditions a large rural population may not receive the benefits of fluoride as an anticaries agent. Engineering aspects of water fluoridation have proved relatively uncomplicated, and adequate controls eliminate all jeopardy to consumers and waterworks' personnel. Important phases of accepted fluorine methods are presented. The chemistry of fluorides is discussed in a concluding chapter.

The monograph serves a useful purpose by presenting factual data and expert opinions on the various phases of water fluoridation and dental caries control. It is the consensus that fluoridation of drinking water is not a public health hazard and exerts a remarkable measure of dental caries control.

F. J. McClure

COMPREHENSIVE DENTAL CARE IN A GROUP PRACTICE

Group Health Association, Inc., and Division of Dental Resources, U. S. Public Health Service. 48 pages with 30 tables and 6 figures. Appendix. Price 25 cents. Washington, D. C., U. S. Government Printing Office, 1954.

Since 1937, Group Health Association, Inc., of Washington, D. C., has provided comprehensive medical care and hospitalization on a prepayment basis. Most enrollees are federal civil service personnel and their dependents.

This booklet contains data on Group Health Association's dental program, which was established in 1949. About 7,500 of the 20,000 persons enrolled in the medical and hospital programs participate in the dental program. Experience and statistics obtained through this program are expected to provide a sound basis for the establishment of a dental prepayment plan in the near future.

The "group practice" referred to in this study differs considerably from the usual dental group practice. Patients are from a considerably higher than average economic and educational bracket. They are drawn from a well-established group of medical and hospital care plan beneficiaries and agree beforehand to accept all recommended dental care. This agreement is a condition for continued participation. Although the patient is billed on a fee-for-service basis, the dentist is not paid on this basis.

Separate statistics are presented on initial and maintenance services, and it is likely that the amount of initial services required would vary substantially with economic status. How-

ever, maintenance care should vary little with economic status. Hence statistics presented on annual number of treatment hours, number of visits and services rendered should be fairly accurate with respect to other socioeconomic groups. When these statistics are used for actuarial purposes, however, the geographic variation in incidence of dental disease should be taken into consideration.

B. Duane Moen

APPLIED ATOMIC ENERGY

By K. Fearnside, M.A., E. W. Jones, B.Sc., and E. N. Shaw, B.Sc. 156 pages with 23 illustrations. Index. Price $4.75. New York, Philosophical Library, Inc., 1954.

This British pocket book on applied atomic energy devotes most of its contents to the preparation and use of radioisotopes in biology, medicine, agriculture and industry. The appendix presents a list of isotopes available from Harwell, the British atomic energy laboratory. The book reviews the fundamentals of modern physics.

For the dentist the high point of the volume is the inclusion of photographs of some of the applications of radioactive materials. One shows the penetration of leather by radioactive calcium in the form of lime. The possibility of microinjection in some small dental structure is indicated by the picture of the microinjection of a cockroach. A radioautograph of an end-mill tool after it was used for cutting radioactive steel suggests the use of a radioactive bur in studies of cutting efficiency.

Needless to say, the imaginative dentist will find this small volume not only a source of information but a source of much inspiration.

William Ward Wainwright

THE PHYSICS OF RADIATION THERAPY

By Harold Elford Johns, Ph.D. 286 pages with 137 figures and 36 tables. Index. Appendix. Price $8.50. Springfield, Ill., Charles C Thomas Co., 1953.

This book is part of the American Lecture Series on Radiation Therapy. The author is professor of physics at the University of Saskatchewan, Canada. The book includes an authoritative presentation of such subjects as the structure of matter, the physics of radiation, the production and properties of roentgen rays, their measurement and quality. Its principal contributions are in the explanation of the interaction of roentgen rays with a scattering medium such as occurs when deep roentgenotherapy is administered to a patient.

As a result of absorption and scatter of roentgen rays, the dose delivered at different depths in a patient varies considerably. Measurements of the dose are presented in graphs of isodose curves.

Such considerations in dental roentgenography are only beginning to be presented (for example, by E. Dale Trout) in discussions of the relation of scattered radiation to whole body exposure of the dental x-ray operator. The usual publication on hazards to the dental operator considers only one dimension; that is, the straight line dimension. The addition of isodose curves to this consideration adds the remaining two dimensions of space and will enable dentists to understand the complete hazards in all portions of the dental office.

Consideration is given also to the calculation of dosage for the special case of whole body irradiation. Radiation dosage is presented for therapy from radium and high energy devices such as the cyclotron, betatron, synchrotron, neutron sources, Van De Graaff generator and sources of artificial radioactivity such as cobalt 60. Methods are given for the calculation of radiation dose from radioisotopes introduced internally.

William Ward Wainwright

ISOTOPIC TRACERS IN BIOCHEMISTRY AND PHYSIOLOGY

By Jacob Sacks, M.D. 383 pages with 22 figures and 3 plates. Indexes. Appendix. Price $8.50. New York, McGraw-Hill Book Co. Inc., 1953.

This book has been written for students of biochemistry, physiology and pathology who wish to acquire understanding of the contributions of radioactive materials in investigation. There are many sections of this book which are of special interest to the dentist.

The three plates, for example, show the special possibilities of the use of radioactive materials in dentistry.

The first shows the deposition of radioactive iodine in the cells of the thyroid gland, a technic which has aroused great interest among dentists. The second plate shows the deposition of phosphorus in bone, and the third shows two of the experiments of Calvin and his group on photosynthesis. It may surprise the dentist to learn that within four seconds radioactive carbon dioxide is transformed into simple sugars by the living cells of barley leaves. This information alone may make the

dentist unsatisfied with his insufficient knowledge of the processes involved in dental caries.

Although there are only a few illustrations, a number of them are of special interest. In the chapter on the measurement of radioactivity there are diagrams showing the construction and function of radiation detection instruments such as the ionization chamber and the Geiger-Müller counter. This chapter covers the fundamentals of many technics of measurement of radioactivity which are of direct value to the dental investigator.

The principles of radioautography are given and such essentials as sample thickness in counting chamber samples is adequately outlined. Other chapters cover the general characteristics and use of isotopic tracers, the technics of measurement of stable isotopes, safety precautions, indications for tracer technics, movement of ions across phase boundaries, carbohydrate, fat and protein metabolism, the metabolism of nucleic acids, iodine metabolism, mineral metabolism and tracer studies on the blood.

This book is especially useful to one who wishes to keep abreast of advances in biology and who desires to have the necessary background for an understanding of future advances through the use of radioactive tracers.

William Ward Wainwright

THE PHYSICIAN IN ATOMIC DEFENSE

By Thad P. Sears, M.D. 308 pages with 53 illustrations. Index. Price $6. Chicago, The Year Book Publishers, 1953.

This book is written for the purpose of instructing the physician in the nature of atomic energy and the effects it may produce on the body. The author has condensed a vast amount of information concerning the various forms of radiation and atomic energy, in both war and peace.

He points out that in caring for victims of an atomic bomb attack dentists will be greatly needed, and should have some preliminary training in first aid and emergency medical casualty care.

A discussion of atomic structure and the influence of radioactivity is followed by a description of isotopes, their methods of manufacture and their application to medical practice.

The author then outlines the nature of atomic bomb injuries and various types of protective therapy.

Final chapters cover methods of mass casualty care. As the number of physicians and nurses will be too few to care for the thousands of casualties following an atomic attack, the author points out that there will be need for auxiliary medical workers. These workers, he says, should be trained now.

Russell W. Bunting

MAXILLO-FACIAL LABORATORY TECHNIQUE AND FACIAL PROSTHESIS

By Stanley Braiser. 232 pages with 291 illustrations. Appendix. Index. Price $5.50. London, Henry Kimpton, 1954.

The author of this 18 chapter book is chief technician of the prosthetic laboratory, plastic surgery, Burns and Jaw Injury Centre, St. Lawrence Hospital, Chepstow, Montreal. He has presented concisely and has adequately illustrated material of value and interest to doctors and technicians concerned with maxillofacial surgery and associated prosthetics.

About half the material is devoted to splints of various forms, uses and construction. Several chapters are devoted to the resilient materials suitable for body prosthesis. Skull plates and facial prosthesis are also discussed. There is a short chapter on palatal obturators.

The author again establishes that in order to evolve a satisfactory prosthesis there must be the closest cooperation and coordination between the surgeon, prosthodontist and technician.

This text could well be in the library of those plastic surgeons, prosthodontists and laboratory technicians engaged in restorative work of this type.

Charles S. Lipp

CERAMICA DENTAL VOL. 1. LAS CORONAS-FUNDA EN LA REHABILITACIÓN MORFOFISOLÓGICA, PSÍQUICA Y ESTÉTICA. (DENTAL CERAMICS. VOL. 1. BAKED CROWNS IN MORPHOLOGIC, PSYCHOLOGIC AND ESTHETIC REHABILITATION)

By Tebaldo M. Mari. 93 pages with 63 illustrations. Index. Buenos Aires, Editorial Mundi, S. R. L., 1954.

This book is the first volume of a projected work on dental porcelain planned by Tebaldo Mari, head of the clinical section of the prosthetic department of the University of Buenos Aires. Seven case histories, involving extensive oral restoration with porcelain crowns, are presented.

The author makes clear that he believes in considering each case from the esthetic, psychological and physiological aspects. To sub-

stantiate his diagnoses and to illustrate his technics he presents one case history in detail.

In the first two chapters the background of the case is outlined, and the treatment plan is described step by step, including the preparation of the mouth, laboratory technics and color selection. The importance of a clearly defined "shoulder," without which the author feels no all-porcelain crown should be attempted, is emphasized.

Chapter 3 outlines six case histories, more briefly, but with extensive illustration. Conclusions are presented in chapter 4. The author states that his own experience, substantiated by investigations of others in the ceramics field, indicates that baked porcelain provides the most satisfactory material for any type of crown. Painstaking and carefully planned technic is essential, but the results more than justify the time and expense involved. The illustrations are clearly reproduced, type is legible and the paper is of good quality. The text is in Spanish.

Martha Ann Mann

DIE ERKRANKUNGEN DER SPEICHELDRÜSEN

By Hermann Mathis, Prof. Dr. med. 90 pages with 58 illustrations. Index. Price 92 DM. Muenchen, Germany, Carl Hanser, 1954.

This monograph deals with the diseases of the salivary glands. The author starts with an evaluation of sialography and supports his fine description with clear illustrations.

One chapter is devoted to the physiological and pathological activity of the glands. The author describes the pathology of these organs and includes a discussion of clinical cases. One reads with interest the theory, clinical considerations and therapy associated with these pathological conditions.

The book is well written and covers the international literature. It is a fine addition to the literature of the diseased salivary glands.

Eugene Schorr

THE MACMILLAN MEDICAL DICTIONARY

Edited by Sir Cecil Wakeley, K.B.E. 471 pages. Price $6.95. New York, Macmillan Co., 1954.

This new medical dictionary, because of its format, type face and paper, creates a pleasing first impression. Its contents, however, leave much to be desired. It offers less than most standard medical dictionaries as it contains no appendixes and has fewer terms than are found in volumes with which American students are familiar. The definitions are shorter and there are fewer subdivisions than are expected in a literary tool of this type. The lack of illustrations is particularly unfortunate.

Inasmuch as the book was prepared and published in Britain, it is understandable that the British spelling of scientific and technical terms would prevail. It is not understandable, however, why in the American edition, at least, both British and American spellings are not given for such words as "anesthesia," "anemia" and "hemorrhage." Such dual spelling, commonly provided by American medical lexicographers, is most helpful.

Most of the definitions in the book are acceptable, some are not. For instance, "periodontium" is defined as the "membrane lining the cement of a tooth: the periodontal membrane," and "dentistry" as "the science pertaining to the teeth." What these and other definitions lack in exactness they more than make up in conciseness, although even conciseness can be carried to a point where it is not a virtue.

In view of the several excellent medical dictionaries on the American market, it is predicted that this volume will not have a wide acceptance among practitioners in this country.

J. P. Hunt

LABORATORY EXPERIMENTS IN PHYSIOLOGY

By W. D. Zoethout, Ph.D. Fifth edition. 260 pages with 96 illustrations. Index. Appendix. Price $3.50. St. Louis, C. V. Mosby Co., 1954.

In this volume, Dr. Zoethout has eliminated some of the less desirable features of earlier editions, has introduced new features and has rewritten a number of the experiments so as to give them additional meaning and teaching potential. An example of this excellent rewriting is Experiment 6, which has been revised so as to vastly improve the lessons which can be learned on the proper and improper ways to handle and use a kymograph.

Although this edition presents the latest knowledge on experiments and experimental procedures, it fails to discuss some of the newer equipment. For example, electronic apparatus is not mentioned. These newer stimulators, which work on the principle of a thyrotron discharge tube, are far superior to the

inductorium for experimental work. Although electronic apparatus is comparatively expensive, it would seem that students ought at least to know of these developments.

There are a few nearly unworkable mechanisms, such as the electrical hookup shown in Figure 25. The possibility of successfully conducting Experiment 18 with the apparatus wired as shown in Figure 25 is remote. Dr. Zoethout undoubtedly is aware of this situation since he instructs the students to use a more workable arrangement if the first one fails to give results. Also, in Experiment 72 (b), the instructions are easily misunderstood. Use of just a few clear directives at the proper places would eliminate all possibility of confusion in this important experiment.

One of the most obvious improvements in the book is in the choice and clarity of the diagrams. The legibility, arrangement, and general appearance of the manual is in keeping with past standards, while the teaching utility surpasses previous editions by a wide margin.

B. F. Gurney

FUNDAMENTALS OF ANESTHESIA

Prepared under the editorial direction of the Consultant Committee for Revision of Fundamentals of Anesthesia, Council on Pharmacy and Chemistry, American Medical Association. Third edition. 279 pages with 89 illustrations and 19 tables. Index. Appendix. Price $6. Philadelphia, W. B. Saunders Co., 1954.

This book is an excellent reference manual for students of anesthesia. It presents in outline form a compact but comprehensive review of a broad subject. It describes (1) the basic principles of the physiology, pharmacology, chemistry and physics on which the sound practice of anesthesiology is based, (2) the technical procedures necessary to apply these principles effectively in relieving surgical pain and (3) the application of these principles to the management of patients suffering from injury, illness, operation or effects of depressant drugs.

As a result of its brevity, the text emphasizes fundamentals at the expense of details. The result is that beginners will find it rather difficult to follow certain phases of the matter without the aid of a standard modern textbook for purposes of elaboration.

A wealth of current knowledge, vital to the understanding of and successful administration of anesthesia, has been painstakingly and lucidly condensed into one compact volume. The description of technics for laryngoscopy and endotracheal intubation and the discussion of laryngospasm deserve special mention. Although the chapter on regional (conduction) anesthesia is extensive, it neglects to consider nerve blocks used in oral and maxillofacial surgery.

This text is recommended as a valuable adjunct for those who are interested in the study and practical application of anesthesia.

James Springer

PERIODONTIA

By Edgar D. Coolidge, D.D.S., and Maynard K. Hine, D.D.S. Second edition. 384 pages with 250 illustrations and 2 color plates. Index. Price $7.50. Philadelphia, Lea & Febiger, 1954.

The second edition of *Periodontia* by Coolidge and Hine is a textbook with somewhat more limited objectives than those of other recent texts of periodontology. Emphasis is placed on the prevention of oral disease and on the background and fundamentals of treatment. The authors have consciously avoided presenting the details of therapy, especially as therapy is applied to moderately advanced and advanced periodontal disease, in order to stress what they consider most essential to the undergraduate in periodontics.

The 14 chapters cover the prevention and classification of periodontal disease, the treatment of inflammatory changes in the gingival and periodontal tissues, and the correction of occlusal disharmony and the care of the oral tissues.

This second edition is an expanded text and a definite improvement on the original publishing of 1951. Many new illustrations have been included. Reading of the text is facilitated by the new chapter organization, and the understanding of periodontal disease is clarified by the addition of chapter eight, "Hyperplastic Gingivitis and Hyperplasia of the Gingival Tissues." A second new chapter, one which deals with occlusal equilibration, supplies what was a noticeable lack in the first edition. Numerous fresh references to the current literature, as in the coverage of gingivosis, enhance the value of the book.

It is to be hoped that a third edition of this excellent text will see even further changes. Certain topics have so far received emphasis in the volume out of proportion to their place in periodontics and periodontal teaching. The large group of black and white photomicrographs of organisms in chapter six actually may be of limited usefulness. A smaller number

of like photographs in color might carry the point just as well.

Similarly, the review of technics applicable to the treatment of acute necrotizing ulcerative gingivitis and the survey of variations in periodontal membrane thickness are examples of this occasional lack of sound proportionment. The new and valuable section on occlusal equilibration could have been made more valuable by a brief outline of procedures or rules which could be applied to a given case.

Coolidge and Hine have written a text which rightly deserves its continuing and increased use by those who need an introduction to periodontics and a work which emphasizes prevention and a limited range of therapy.

A. L. Ogilvie

MAXILLOFACIAL ANATOMY WITH PRACTICAL APPLICATIONS

By Harry H. Shapiro, D.M.D. 392 pages with 314 illustrations. Index. Price $12. Philadelphia, J. B. Lippincott Co., 1954.

This book, clearly written and excellently illustrated, is intended for use by the student and practitioner of dentistry and medicine. It replaces Doctor Shapiro's former text, *Applied Anatomy of the Head and Neck.*

The book deals with the pathological morphology of the maxillofacial region and in many instances discusses practical application. The roentgenographic illustrations are particularly well done. Some are especially interesting.

The author assumes that the reader has a background in anatomy. Thus the book is valuable to the more advanced student. The organization, style, and print are exceptional. Simplicity of the binding makes the book distinctive.

J. P. Lazansky

PRINCIPLES AND PRACTICE OF ANTIBIOTIC THERAPY

By Henry Welch and 16 collaborators. 699 pages. Index. Price $12. New York, McGraw-Hill Book Co., 1954.

This book is an outgrowth of *Antibiotic Therapy,* published in 1951 by Henry Welch and C. N. Lewis.

The chemistry, pharmacology, microbiologic actions, and available dosage forms of the more important antibiotics are covered in the first half of the volume. The newest clinically important antibiotics, such as tetracycline and erythromycin, are adequately described in this section. Important recent information concerning some of the older drugs, such as streptomycin, dihydrostreptomycin, chlortetracycline and oxytetracycline, has not been added. This omission is especially noticeable in the dates of the bibliographical references at the end of the chapters in which these latter drugs are discussed. There are few references later than 1950.

The chapters devoted entirely to the clinical aspects of antibiotic therapy were all written by collaborators and comprise the second half of the volume. These chapters seem to be as nearly up to date as is feasible in the rapidly changing field of antibiotics.

Helmut A. Zander and Henry B. Clark contributed a good chapter on dental applications. There is an interesting discussion of the treatment of Vincent's disease in the chapter on "Spirochetal Diseases Other Than the Treponematoses." However, the book is addressed primarily to the physician and pharmacologist.

It is readable, well organized and beautifully printed. It is certainly one of the best, and perhaps actually the best single current work in its field. It will be a useful addition to the libraries of those in the health professions who are interested in antibiotic therapy.

Donald A. Wallace

REVIEW OF MEDICAL MICROBIOLOGY

By Ernest Jawetz, Joseph L. Melnick and Edward A. Adelberg. 360 pages with 92 illustrations. Index. Appendix. Price $4.50. Los Altos, Calif., Lange Medical Publications, 1954.

The purpose of the *Review* is to furnish the medical student and physician with a brief account of microbiology as it is related to clinical infections. A considerable portion of the book is devoted to the biology of microorganisms in order to make the book useful to students in introductory courses. The table of contents shows that the subject matter covered is extensive and probably complete.

There are 35 chapters, about one third devoted to general microbiology, the rest concerned with specific groups of microorganisms and the infections in man associated with them. The authors have included a tremendous amount of material, but have been extremely brief in their discussions. References are given at the end of each chapter, but no indication is given as to which reference could be consulted for further information on a particular topic in that chapter.

The information has been handled fairly well, but the section on normal flora is poorly handled. This important subject deserves more space and care in presentation. For example, the organism *Lactobacillus bifidus* is given as a common inhabitant of the oral cavity, and green streptococci are referred to as *Streptococcus viridans*. The latter is not a distinct species.

Many illustrations are without value and could be deleted. Others lack information as to magnification. Some have not reproduced well. The book is paper bound and lithographed. The type is too small for comfortable reading. An error on page 94 has been corrected by a pasted overlay. The reviewer finds little in the book not covered in the recent textbooks of microbiology.

Ned B. Williams

ORAL PATHOLOGY: A HISTOLOGICAL, ROENTGENOLOGICAL AND CLINICAL STUDY OF THE TEETH, JAWS AND MOUTH

By Kurt H. Thoma, D.M.D. Fourth edition. 1,536 pages with 1,594 illustrations, including 92 in color. Index. Price $22.50. St. Louis, C. V. Mosby Co., 1954.

The author offers a clear, interesting and dependable presentation of one of the most important subjects in dentistry. General practitioners, oral surgeons, specialists in any field of dentistry and dental students will find it more than adequate for use as a text and reference book.

There are 44 chapters covering the diseases and anomalies of the teeth, jaws, temporomandibular joint, nerves and muscles of the face, mucous and salivary glands, as well as tumors and cysts. The arrangement is orderly and logical; the presentation is authoritative for the most part. Because of the long and varied clinical experience of the author the chapters on tumors, bone diseases and infections are especially good.

The chapter on dental caries has had painstaking preparation and has been practically rewritten. The references to the literature are generous and cover all the important original sources. The index is a useful and handy key in the search for specialized information. Numerous appropriate illustrations with generous and, for the most part, adequate legends are of very great service in clarifying the text.

The author and publisher have every reason to be proud of this edition, as it is a definite step in the right direction. By eliminating text and illustrations of least value in the preceding edition, and by doing an impressive job of rewriting with the addition of top notch new illustrations, the author offers the reader a much better approach to this subject. The publisher has made every effort to cooperate in making the book an outstanding achievement. The paper, type and printing all serve to make for easy reading and hard use. The binding is substantial, and the red and gold lettering on the gray cover is most attractive.

Edward H. Hatton

BANK INSTALMENT FINANCING OF MEDICAL AND DENTAL FEES

By Thorpe A. Mayes. 72 pages. Chicago, American Bankers Association, 1954.

For the first time, a thorough study is presented of a highly specialized field of consumer finance and banking—installment financing of fee collections. Dentists and physicians, because of the high ethical codes of their profession, have tended to subordinate discussions of fees and collections to professional subjects. In most cases fees and collections have been considered matters for individual action only.

This thesis, prepared by Mr. Mayes, a Texas banker, shows that in a few cities some attention has been given to the subject. The Detroit Postpayment Plan and the Massachusetts Blue Triangle Plan are pointed out as worthy of consideration by local dental societies.

The main plan discussed in this book is one rapidly gaining in popularity. It is the "Society Non-Recourse Plan for Installment Financing of Fees." According to this plan, the local dental society enters into an agreement with the participating bank.

The bank agrees to purchase notes arising out of dental bills offered to it by members of the society eligible to use the plan. The notes are purchased on a nonrecourse basis as far as the dentist is concerned but with recourse against a reserve account built from a percentage taken out of each note purchased. Other details of the plan and its advantages are explained in detail.

Dental societies with committees considering the fee collection problem would benefit from a close study of Mr. Mayes' discussion. For those societies without committees, a reading by at least key officers is recommended. This study could readily put money in the pockets of members of those societies that are spurred to action by its recommendations.

Alban Weber

A CLINICAL MANUAL OF ENDODONTIA

By James R. Jensen, D.D.S. 81 pages with 161 illustrations and 6 graphs. Price $3. Dubuque, Iowa, Wm. C. Brown Co., 1954.

It is unfortunate that the author did not use the term "endodontics" in the title of his manual. The "ics" suffix was officially adopted by the American Association of Endodontists in 1952 on recommendation by the A.A.E. Committee on Nomenclature.

In the author's prefatory remarks, he states that this manual "is an outgrowth of the section of pulpal therapy presented in *A Clinical Manual of Operative Dentistry* edited by Robert O. Green."

The format and illustrations are neatly executed. The author states that "no inference [sic] is made that the techniques presented here are the only methods of endodontically treating teeth." It is unfortunate that the methods proposed are extremely cumbersome and laborious.

Nevertheless, this manual may serve as an elementary technical guide to undergraduate dental students.

Victor H. Dietz

EFFECTIVE DENTAL ASSISTING

By L. H. Schwarzrock, D.D.S., and Shirley Pratt Schwarzrock, B.S., M.A. 375 pages. 170 illustrations. Index. Appendix. Price $7 hard cover, $6.50 plastic bound soft cover. Minneapolis, Loren Press, 1954.

L. H. Schwarzrock published a manual in 1953 titled *Training Manual for the Dental Chair Assistant.* He received many requests and suggestions for its publication in text form, so he revised the manual with the title *Effective Dental Assisting.*

This book can be listed as a valuable source of information in any formal training course for dental assistants, and especially for the accreditation program of the American Dental Assistants Association. It is useful also to a dentist training a dental assistant who has little or no knowledge of her responsibilities and duties in the dental office. However, the dentist should read the book carefully and revise certain sections of it so that it conforms with the routine and methods in his office, or the book may be confusing to the untrained employee.

The material is divided into three general sections. The first part presents the reader with an excellent background of dentistry, which includes the role of the dentist, history of dentistry, ethics and conduct. It includes also some pertinent information on caries and anatomy of teeth.

The second section depicts the secretarial responsibilities in the office and the importance of public relations in the profession.

The final section describes the dental assistant's duties at the chair as well as laboratory procedures, roentgenography, care and maintenance of the dental equipment.

The index of illustrations is alphabetically arranged so that it is very easy to understand the material included in each section.

The book is worth while both as a review and in the training of the new personnel of the dental office team.

Evelyn E. Maas

ESSENTIALS OF REMOVABLE PARTIAL DENTURE PROSTHESIS

By Oliver C. Applegate, D.D.S. 323 pages with 352 illustrations, 10 in color. Index. Price $10. Philadelphia, W. B. Saunders Co., 1954.

The essentials of removable partial denture prosthesis are thoroughly and completely covered in this book. Although the importance of the subject may be controversial, the book certainly deals with a phase of dental service which is needed by many people.

Chapters cover terminology, which includes definitions of partial denture and removable bridge; classification of partial dentures according to the Kennedy method of classification; component parts of a partial denture; use of the surveyor, appliance support, impression registration and the study cast. Problems relating to design and stress control are discussed, and factors relative to successful partial denture service are outlined.

Exact clinical procedures are carefully described. The material is logically organized and follows a good chronological pattern. Illustrations are numerous and well selected.

This book is written in question and answer form. It contains a good index. It is apparent that the author knows his subject thoroughly and has new information at his finger tips. His style is not particularly easy to read since the book is written as an outline; nonetheless it should prove to be valuable as a textbook or reference book.

Monte G. Miska

Deaths

Chaffin, Felix G., Jr., Nashville, Tenn.; College of Dentistry, University of Tennessee, 1951; died November 26; aged 29.

Crocker, Orville H., Webb City, Mo.; Kansas City-Western Dental College, 1926; died November 1; aged 52.

Davis, Ansley H., Punxsutawney, Pa.; Department of Dentistry, Starling-Ohio Medical College, 1911; died November 23; aged 66.

Dingler, Fred J., Seattle; North Pacific College of Oregon, Portland, 1918; died January 2.

Eames, E. Leslie, Glendale, Calif.; School of Dentistry, University of Colorado, 1911; died December 22; aged 68.

Edmunds, Edwin A., Harrisburg, Pa.; School of Dentistry, University of Pennsylvania, 1919; died November 24; aged 60.

Farrar, Alvin H., Stigler, Okla.; died March 3, 1954; aged 76.

Garland, Carl D., Tishomingo, Okla.; School of Dentistry, University of Louisville, 1919; died October 9; aged 60.

Hahn, William L., Berkeley, Calif.; College of Dentistry, University of California, 1928; died January 9; aged 51.

Hanson, Elmer C., Racine, Wis.; Chicago College of Dental Surgery, Loyola University, 1906; died December 13; aged 73.

Henkel, Walter H., Monrovia, Calif.; Indiana Dental College, 1903; died December 23; aged 73.

Houston, David T. B., Paterson, N. J.; Baltimore College of Dental Surgery, University of Maryland, 1912; died December 25; aged 71.

Hutt, Spence A., Houston, Texas; Dental School, Northwestern University, 1923; died January 10; aged 54.

Jacobs, Jacob M., Roxobel, N. C.; Baltimore College of Dental Surgery, 1909; died July 14; aged 84.

Karnick, Ralph L., Chicago; Dental School, Northwestern University, 1934; died December 19; aged 55.

Kelley, Frank J., South Norwalk, Conn.; School of Dentistry, University of Pennsylvania, 1910; died December 13; aged 73.

Kenna, Frank J., Braintree, Mass.; Philadelphia Dental College, 1904; died December 4; aged 78.

Kerrison, Edwin H., Camden, S. C.; Atlanta Dental College, 1909; died December 12; aged 74.

Kestly, Ralph C., Milwaukee; Dental Department, Milwaukee Medical College, 1902; died January 5; aged 79.

Kousnetz, Louis B., Los Angeles; College of Dentistry, University of Illinois, 1916; died January 4; aged 66.

Kutch, O. D., Hobart, Okla.; Kansas City-Western Dental College, 1928; died December 28; aged 50.

Laing, George L., Philadelphia; School of Dentistry, University of Pennsylvania, 1902; died November 29; aged 91.

Lancaster, William L., Mansfield, Ohio; Department of Dentistry, Starling-Ohio Medical College, 1914; died November 6; aged 63.

Lindquist, Arthur O., Minneapolis; College of Dentistry, University of Minnesota, 1911; died November 29; aged 66.

MacGregor, Harold D., Ferndale, Mich.; College of Dental Surgery, University of Michigan, 1926; died December 20; aged 57.

McCurdy, Wilford C., New Brighton, Pa.; Pennsylvania College of Dental Surgery, Philadelphia, 1901; died November 26; aged 74.

McElwee, Raymond J., Indianapolis; Indiana Dental College, 1916; died December 9; aged 63.

McKeen, Elmer L., Los Angeles; College of Dentistry, University of Southern California, 1931; died December 30; aged 54.

Mazur-Dinnsen, Florence, Chicago; Dental School, Northwestern University, 1918; died December 7; aged 60.

Michener, Roy D., Chicago; Chicago College of Dental Surgery, Loyola University, 1904; died January 18; aged 79.

Musick, Murray G., Dallas, Texas; College of Dentistry, Baylor University, 1922; died December 19; aged 65.

Nelson, Louis M., Reno, Nev.; School of Dentistry, University of Pennsylvania, 1917; died December 9; aged 59.

Newcome, William J., Punxsutawney, Pa.; died November 28; aged 42.

Pell, Glenn J., Indianapolis; Indiana Dental College, 1912; died December 7; aged 68.

Pendleton, Robert H., Norman, Okla.; Kansas City Dental College, 1897; died February 4, 1954; aged 88.

Pollack, Abraham, Brooklyn; College of Dental and Oral Surgery, New York, 1919; died December 19; aged 55.

Priest, Karlton K., Vallejo, Calif.; Colorado College of Dental Surgery, 1925; died December 1; aged 63.

Preusker, Gustave A., Chicago; College of Dentistry, University of Illinois, 1906; died December 6; aged 77.

Read, Emma T., San Diego; died January 8; aged 97.

Reinhart, Richard W., Duluth, Minn.; Chicago College of Dental Surgery, Loyola University, 1901; died June 22; aged 73.

Remy, Frank J., New York; New York College of Dentistry, 1910; died December 6; aged 66.

Roberts, Joseph T., Oklahoma City; Louisville College of Dentistry of Centre College, 1906; died October 23; aged 71.

Russell, Carl F., Atlanta; Atlanta-Southern Dental College, 1940; died December 14; aged 42.

Sand, Ralph E., San Francisco; College of Physicians and Surgeons, San Francisco, 1925; died December 22; aged 51.

Schlesinger, Ruth, Pittsburgh; School of Dentistry, University of Pittsburgh, 1943; died December 7; aged 38.

Sherwin, Rudolph, New York; died August 5; aged 49.

Simerson, Fayette H., Phillips, Wis.; Dental School, Marquette University, 1934; died December 4; aged 44.

Singer, Adolph D., Inglewood, Calif.; College of Dentistry, University of Southern California, 1926; died December 28; aged 56.

Smedberg, Ernest O., Rosemead, Calif.; Illinois School of Dentistry, 1901; died September 7; aged 75.

Smith, William L., Minneapolis; College of Dentistry, University of Minnesota, 1914; died August 7; aged 62.

Snyder-Fritz, Evelyn, Palm Springs, Calif.; died December 13; aged 50.

Steeves, Edward E., Brooklyn; School of Dentistry, University of Pennsylvania, 1934; died December 30; aged 45.

Szolis, Joseph P., Pittsburgh; School of Dentistry, University of Pittsburgh, 1935; died October 20.

Thomas, Ross T., Kansas City, Mo.; Dental Department, St. Louis College of Physicians and Surgeons, 1889; died October 13; aged 90.

Thompson, Edward L., Jefferson City, Mo.; died November 14; aged 71.

Vaughn, Jeskalian M., Los Angeles; Medico-Chirurgical College of Philadelphia, 1915; died December 14; aged 59.

Vinal, Raymond C., Warren, Maine; Dental School, Tufts College, 1921; died December 9; aged 58.

Walker, Andrew J., Atoka, Okla.; State Dental College, Dallas, 1915; died March 27, 1954; aged 58.

Weiher, Robert J. H., Greenwood, Wis.; Dental School, Marquette University, 1923, died July 31; aged 54.

Weil, Abraham B., Woodmere, N. Y.; died August 14; aged 63.

Wells, Harry A., Aberdeen, S. Dak.; College of Dentistry, University of Minnesota, 1910; died August 11; aged 65.

Wells, Mervyn T., Atlanta; Atlanta-Southern Dental College, 1924; died November 29; aged 64.

Wheeler, Howard M., Glendale, Calif.; School of Dentistry, North Pacific College of Oregon, Portland, 1918; died December 20; aged 60.

White, Harvey B., Wichita Falls, Texas; died November 20; aged 66.

White, Leo A., Sacramento, Calif.; Dental School, Harvard University, 1907; died December 12; aged 68.

Whitehouse, Frank H., Cambridge, Mass.; Dental School, Tufts College, 1905; died July 24.

Wilkins, Fred C., Sacramento, Calif.: College of Dentistry, University of California, 1903; died November 19; aged 75.

Williams, Arthur F., Quincy, Mass.; Dental School, Tufts College, 1917; died November 16; aged 58.

Williams, Edward E., Sayre, Pa.; died December 8.

Williams, Owen H., Missoula Mont.; died July 10; aged 89.

Williams, Walter R., Sunbury, Ohio; College of Dentistry, Ohio State University, 1923; died October 9; aged 57.

Wilson, Ira C., Hamilton, Mo.; Western Dental College, Kansas City, 1904; died November 12; aged 76.

Wise, Millard D., Taft, Texas; College of Dentistry, Baylor University, 1930; died July 3; aged 48.

Withers, Alpheus C., Denver; Kansas City-Dental College, 1909; died October 5; aged 73.

Wolfson, Bernard, Minneapolis; College of Dentistry, University of Minnesota, 1922; died November 23; aged 54.

Wood, Carrie E. B., Audubon, Iowa; died August 6; aged 79.

Wooldridge, Sylvester J., Harrisonville, Mo.; Kansas City Dental College, 1915; died October 7; aged 61.

Yates, Robert W., Upper Darby, Pa.; Medico-Chirurgical College of Philadelphia, 1912; died November 24; aged 71.

Yingling, John G., Port Clinton, Ohio; died November 25; aged 80.

Youngson, James R., Cincinnati; Cincinnati College of Dental Surgery, 1899; died October 29; aged 83.

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Announcements

MEETINGS OF THE AMERICAN DENTAL ASSOCIATION

Ninety-Sixth Annual Session	Oct. 17-20, 1955	San Francisco
Ninety-Seventh Annual Session	Oct. 1-4, 1956	Atlantic City, N. J.
Ninety-Eighth Annual Session	Nov. 4-7, 1957	Miami, Fla.
Ninety-Ninth Annual Session	Nov. 10-13, 1958	Dallas, Texas
One-Hundredth Annual Session	Sept. 21-24, 1959	New York

MEETINGS OF CONSTITUENT SOCIETIES

State	Date	Place	Secretary	Address
Alabama			F. A. Finney, Jr.	1015 Forrest Ave., Gadsden
Alaska	June 26-30	Juneau	R. M. MacKenzie	207 Mendenhall Apts., Juneau
Arizona			R. W. Christensen	17 E. Weldon Ave., Phoenix
Arkansas			D. M. Hamm	Box 89, Clarksville
California			L. R. Ludwigsen	450 Sutter St., San Francisco
S. California	May 9-11	Los Angeles	J. P. Bowers	124 W. Lime Ave., Monrovia
Colorado	Oct. 2-5	Colorado Springs	W. R. Humphrey	724 Republic Bldg., Denver
Connecticut	May 18-20	Hartford	E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware			R. V. Reed, Jr.	Medical Arts Bldg., Wilmington
District of Columbia	June 14	Washington	Z. B. Lloyd	2007 R St., N.W., Washington
Florida			J. E. Edwards	152 Alhambra Circle, Coral Gables
Georgia	Oct. 2-5	Atlanta	J. W. Yarbrough	Bibb Bldg., Macon
Hawaii	June 15-18	Honolulu	J. H. Dawe	810 N. Vineyard St., Honolulu
Idaho	May 19-21	Couer d'Alene	F. O'Halloran	Box 703, Coeur d'Alene
Illinois	May 9-12	Peoria	P. W. Clopper	623 Jefferson Bldg., Peoria
Indiana	May 16-18	Indianapolis	D. C. Barnhill	400 Bankers Trust Bldg., Indianapolis
Iowa	May 1-4	Des Moines	H. I. Wilson	639 Insurance Exchange Bldg., Des Moines
Kansas	May 15-18	Kansas City, Mo.	F. A. Richmond	861 Brotherhood Bldg., Kansas City
Kentucky			A. B. Coxwell, Jr.	1976 Douglass Blvd., Louisville
Louisiana			J. S. Bernhard	2515 Line Ave., Shreveport
Maine	June 23-25	Rockland	S. M. Gower	Box 27, Skowhegan
Maryland	May 2-4	Baltimore	E. L. Pessagno, Jr.	415 Medical Arts Bldg., Baltimore
Massachusetts	May 1-4	Boston	H. E. Tingley	12 Bay State Rd., Boston
Michigan			F. Wertheimer	Michigan Dept. of Health, Lansing
Minnesota	Apr. 23-25, 1956	St. Paul	C. V. E. Cassel	225 Hamm Bldg., St. Paul
Mississippi			B. A. Cohen	306 Plaza Bldg., Jackson
Missouri	May 15-18	Kansas City	E. D. Suggett	201 Merchants Bank Bldg., Jefferson City
Montana	May 5-7	Bozeman	E. G. Vedova	Roundup
Nebraska	May 9-12	Lincoln	F. A. Pierson	1112 Federal Securities Bldg., Lincoln
Nevada	June 10-12	Lake Tahoe	O. M. Seifert	506 Humboldt St., Reno
New Hampshire	June 12-14	Whitefield	F. E. Williams	814 Elm St., Manchester
New Jersey			J. G. Carr	407 Cooper St., Camden
New Mexico	May 22-25	Ruidoso	J. S. Eilar	Medical Arts Square, Albuquerque
New York	May 16-18	New York	C. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina	May 15-18	Pinehurst	R. D. Coffey	Kibler Bldg., Morganton
North Dakota	May 1-4	Grand Forks	V. B. Keltgen	517 de Lendrecie Bldg., Fargo
Ohio	Nov. 13-16	Cleveland	E. G. Jones	185 E. State St., Columbus
Oklahoma			S. A. Russman	809 Medical Arts Bldg., Oklahoma City
Oregon			T. D. Holder	308 Selling Bldg., Portland
Panama Canal Zone			A. L. Teitel	Box D, U.S. Naval Station, Rodman
Pennsylvania	May 16-18	Philadelphia	M. D. Zimmerman	217 State St., Harrisburg
Puerto Rico			M. A. Rosso	Box 9023, San Juan
Rhode Island	Jan. 17, 18, 1956	Providence	W. D. MacIntosh	506 Industrial Trust Bldg., Providence

State	Date	Place	Secretary	Address
South Carolina	May 22-24	Charleston	J. R. Owings	7 Medical Court, Greenville
South Dakota	May 15-17	Aberdeen	L. N. Thelen	229 S. Prairie St., Sioux Falls
Tennessee	May 8-12	Nashville	A. M. Ballentine	Pulaski
Texas	May 1-5	San Antonio	W. Ogle	3607 Gaston Ave., Dallas
Utah			R. C. Dalgleish	124 State Capitol Bldg., Salt Lake City
Vermont	May 30-June 1	Manchester	W. J. Reardon	18 Madison St., Rutland
Virginia			W. T. McAfee	705 Colonial National Bank Bldg., Roanoke
Washington			W. B. Martin	Medical-Dental Bldg., Seattle
West Virginia	July 24-27	White Sulphur Springs	G. N. Casto, Jr.	710½ Lee St., Charleston
Wisconsin			A. E. Kopp	Wells Bldg., Milwaukee
Wyoming	June 16-18	Cheyenne	T. J. Drew	State Office Bldg., Cheyenne

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
Alabama	June 20-24* June 20, 21†	Birmingham	W. L. McCarty	200 Professional Center, Montgomery
Alaska			R. H. Williams	Box 2122, Juneau
Arizona	June 20-26*†‡		R. K. Trueblood	107 East A Ave., Glendale
Arkansas	June 20-24*†	Little Rock	H. O. Weatherly	205 Halter Bldg., Conway
California	June 20 July 25	Los Angeles San Francisco	T. E. Tilden	Medico-Dental Bldg., Sacramento
Colorado	June 20-24	Denver	J. M. Peabody	724 Republic Bldg., Denver
Connecticut	June 19-25*†	New York Bridgeport	C. G. Brooks	302 State St., New London
Delaware	June 27-29	Wilmington	P. K. Musselman	143 W. Main St., Newark
District of Columbia			W. T. Birthright	Suite 718, 1835 Eye St., N.W., Washington
Florida	July 11-21*†	Jacksonville	A. W. Kellner	P. O. Box 155, Hollywood
Georgia			P. M. McNeil	307 First National Bank Bldg., Rome
Hawaii	Sept. 1, 2, 4, 5*†‡		H. L. Houvener	427 Dillingham Bldg., Honolulu
Idaho	June 27-30‡		R. E. Blickenstaff	1023 Fourth St., S., Nampa
Illinois			W. A. McKee	503 Wood Bldg., Benton
Indiana	June 14-17*†	Indianapolis	C. A. Frech	Gary National Bank Bldg., Gary
Iowa	May 23-27‡		D. J. FitzGerald	615 Brick & Tile Bldg., Mason City
Kansas	June 6-9	Kansas City, Mo.	G. L. Teall	Box 71, Hiawatha
Kentucky	June 6-9	Louisville	R. M. Justice	1330 Central Ave., Ashland
Louisiana	June 5-10	New Orleans	R. C. Steib	833 Maison Blanche Bldg., New Orleans
Maine	June 20-22	Boston	R. A. Derbyshire	Box 387, Skowhegan
Maryland	June 6-8‡		H. Levin	3429 Park Heights Ave., Baltimore
Massachusetts	June 13-16*† June 15, 16†‡		G. J. Fink	Rm. 33, State House, Boston
Michigan	June 5-11	Ann Arbor	J. L. Champagne	3714 W. McNichols Rd., Detroit
Minnesota	June 13-17*†‡		M. G. Walls	615 Montcalm Place, St. Paul
Mississippi	June 21-23	Jackson	J. C. Boswell	508 Lamar Life Bldg., Jackson
Missouri	June 13-18	St. Louis Kansas City	R. R. Rhoades	414 Central Trust Bldg., Jefferson City
Montana	July 11-14*†	Helena	V. J. Quinn	301 Phoenix Bldg., Butte
Nebraska	June 13	Lincoln	H. E. Weber	1210 Federal Securities Bldg., Lincoln
Nevada	June 13	Reno	R. Whitehead	Suite 6, Masonic Temple, Reno
New Hampshire	June 17, 18 June 17†‡	Boston	S. G. Markos	8 Renaud Ave., Dover
New Jersey	May 25, 26* June 1, 2* June 8, 9*† June 13, 14*	Washington, D.C. Philadelphia New York Trenton	W. A. Wilson	150 E. State St., Trenton
New Mexico	June 20	Santa Fe	J. J. Clarke, Sr.	Artesia
New York			D. W. Beier	23 S. Pearl St., Albany
North Carolina	June 27-July 1	Chapel Hill	F. O. Alford	1107 Liberty Life Bldg., Charlotte
North Dakota	June 20-24	Fargo	A. L. Pushor	Lisbon
Ohio	June 16-18 June 20-22	Columbus	H. B. Smith	322 E. State St., Columbus

State	Date	Place	Secretary	Address
Oklahoma	June 16-18‡		R. P. Keidel	403 Surety Bldg., Muskogee
Oregon	June 6-9*†	Portland	F. L. Utter	506 Pioneer Trust Bldg., Salem
Pennsylvania	June 20-25	Philadelphia	A. M. Stinson	Dept. of Public Instruction, Box 911, Harrisburg
	June 20-22	Pittsburgh		
Puerto Rico			J. Mercado C.	Box 3717, Santurce
Rhode Island			F. M. Hackett	267 Academy Ave., Providence
South Carolina	June 16-18	Columbia	T. C. Sparks	1315 Pickens St., Columbia
South Dakota	June 19-22*†‡		H. T. Aker	Canton
Tennessee	June 13-17‡		C. R. Aita	619 Bennie Dillon Bldg., Nashville
Texas	June 12-18*	Dallas	R. T. Weber	312 Capital National Bank Bldg., Austin
	June 16-18†			
Utah	June 17-July 2	Salt Lake City	D. L. Folsom	1101 First Security Bank Bldg., Salt Lake City
Vermont	June 27-29	Burlington	P. M. Fitch	Newport
Virginia	June 6-11*	Richmond	J. M. Hughes	715 Medical Arts Bldg., Richmond
	June 6, 7†			
Washington	June 20-23	Seattle	M. L. Mower	National Bank of Commerce Bldg., Olympia
West Virginia	June 20-22*†	West Liberty	C. A. Laughlin	613 Prunty Bldg., Clarksburg
Wisconsin	June 13-17*†	Milwaukee	S. F. Donovan	Tomah
Wyoming			W. A. Hocker	210 O & S Bldg., Casper

Most states require applications to be in 30 days prior to examination date.
*Dental examination. †Dental hygiene examination. ‡Write to secretary of dental examining board for information on locations of examinations. §Approximate dates—verify with state dental examining board.

MEETINGS OF OTHER ORGANIZATIONS

Name	Date	Place	Secy. or Chm.	Address
Academy of Denture Prosthetics	May 1-8	New York	I. L. Furnas Secy.	928 Silverado St., La Jolla, Calif.
American Academy of Dental Medicine	May 13-15	New York	W. M. Greenhut Secy.	124 E. 84th St., New York
American Association of Dental Examiners	Oct. 14, 15	San Francisco	C. A. Bumstead Secy.	924 Stuart Bldg., Lincoln, Neb.
American Association of Public Health Dentists	Oct. 16	San Francisco	R. D. Smiley Secy.	Indiana State Board of Health, Indianapolis
American Board of Dental Public Health	Oct. 13, 14	San Francisco	P. E. Blackerby, Jr. Secy.	250 Champion St., Battle Creek, Mich.
American Dental Assistants Association	Oct. 17-20	San Francisco	M. L. Martin Exec. Secy.	410 First National Bank Bldg., La Porte, Ind.
American Dental Assistants Certification Board, Inc.	Oct. 16-20	San Francisco	A. Carey Secy.	601 National Bank Bldg., Lima, Ohio
American Dental Society of Europe	July 11-14	Amsterdam, Netherlands	J. Moloney Hon. Secy.	110 Harley St., London, England
American Denture Society	Oct. 14, 15	San Francisco	A. L. Roberts Secy.	Aurora Main Bldg., Aurora, Ill.
American Institute of Dental Medicine	Oct. 23-27	Palm Springs, Calif.	M. G. Lewis Exec. Secy.	2240 Channing Way, Berkeley, Calif.
American Society of Oral Surgeons	Oct. 11-14	Los Angeles	R. F. Whalen Exec. Secy.	M. C. V. Post Office, Box 876, Richmond, Va.
Ark-La-Tex Dental Congress	Aug. 15	Shreveport, La.	K. V. Donaldson Gen. Chm.	1470 Albert St., Alexandria, La.
Austrian Dental Meeting	Sept. 1-4	Linz on the Danube, Austria	Prof. Hofer Secy.	Medical Association of Upper Austria, Dinghoferstrasse 4, Linz on the Danube, Austria
British Dental Association	July 4-8	Glasgow, Scotland	H. P. Buchanan Secy.	13 Hill St., Berkeley Square, London, England
Chicago Dental Society	Feb. 5-8, 1956	Chicago	K. S. Richardson Exec. Secy.	30 N. Michigan Ave., Chicago
Council on Dental Education, Dental Aptitude Tests	Oct. 7, 8		S. Peterson Secy.	222 E. Superior St., Chicago
Eighth New Orleans Dental Conference	Oct. 30-Nov. 2	New Orleans	B. G. Frick, Jr. Secy.	930 Canal St., New Orleans

Name	Date	Place	Secy. or Chm.	Address
Federation Dentaire Internationale	Aug. 14-20	Copenhagen, Denmark	G. H. Leatherman Secy. Gen.	35 Devonshire Place, London, England
Fourteenth Congres Francais de Stomatologie	Oct. 3-9	Paris, France	R. Vrasse Secy. Gen.	2, Rue de Miromesnil, Paris, France
German Association of Maxillo-Facial Surgery	July 27-30	Hamburg, Germany	F. Schön Secy.	Ludwigstrasse 30, Bad Reichenhall/Bayern, Germany
Mexican Dental Association, Third Dental Congress	Oct. 23-28	Mexico City	E. M. Ross Foreign Secy.	Insurgentes 257, Mexico, D. F.
National Board of Dental Examiners	Dec. 5, 6		G. J. Casey Secy.	222 E. Superior St., Chicago
National Dental Association	Aug. 1-5	Chicago	J. A. Jackson Secy.	P. O. Box 197, Charlottesville, Va.
Northeastern Dental Society	June 5-8	Swampscott, Mass.	M. J. Frasca Secy.	153 Cabot St., Beverly, Mass.
Second Panhellenic Congress	Sept. 25-30	Athens, Greece	B. Stefanopoulos-Vrettos	71 Skoufa St., Athens, Greece
Seminario Anual del Grupo de Estudios Dentales U. S. C. de Mexico	May 15-19	Tehuacan, Puebla, Mex.	R. S. deLascurain Secy.	Insurgentes 257-10, Mexico, D.F.
Sixth Annual Berkshire Conference	June 19-23	Lenox, Mass.	I. Glickman Dir.	Tufts College Dental School, 136 Harrison Ave., Boston
Southeastern Academy of Prosthodontics	May 14, 15	Southern Pines, N. C.	R. W. Durham Secy.	1001 Bankers Insurance Bldg., Macon, Ga.
Southern Society of Orthodontists	Sept. 25-28	Charlotte, N. C.	M. D. Edwards Secy.	132 Adams Ave., Montgomery, Ala.
Southwestern Society of Orthodontists	Oct. 16-19	Wichita, Kansas	H. S. Born Secy.	908 Johnstone, Bartlesville, Okla.

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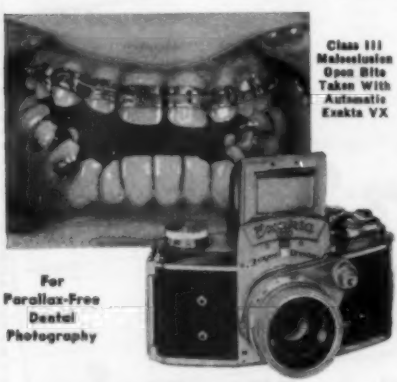

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NORTHERN PACIFIC RAILWAY

Hotel reservation application

96th Annual Session
American Dental Association
Oct. 17-20, 1955
San Francisco

INSTRUCTIONS: Reservations for hotel accommodations may be secured for San Francisco by completing this application and mailing it to: A.D.A. Housing Bureau, 61 Grove Street, San Francisco 2.

Be sure to indicate your arrival time in San Francisco. Reservations will be held only until 6 p.m. of the day you indicate when you will arrive in San Francisco unless special arrangements are made with the hotel.

Names of all persons who intend to occupy the accommodations must be listed on the application.

List four choices of hotels. Confirmation will be sent to the applicant indicating which hotel has accepted the reservation.

Write the A.D.A. Housing Bureau in San Francisco if you wish to cancel the reservation.

A.D.A. HOUSING BUREAU • 61 GROVE STREET, SAN FRANCISCO 2

(Please print or type) A.D.A.

Applicant:

Name _____

_____
(Street address) (City) (Zone) (State)

Arrival in San Francisco _____ a.m. p.m. Leaving _____

Accommodations:

Hotel _____ (First choice) Hotel _____ (Third choice)

Hotel _____ (Second choice) Hotel _____ (Fourth choice)

☐ Single occupancy, rate to range from $_____ to $_____ per day.
☐ Double occupancy, double bed, rate to range from $_____ to $_____ per day. } 2 names must be listed below
☐ Double occupancy, twin beds, rate to range from $_____ to $_____ per day. }
☐ Suite of _____ rooms, including parlor, rate to range from $_____ to $_____ per day.

Occupants: (use an extra page for listing additional names if necessary)
Room will be occupied by:

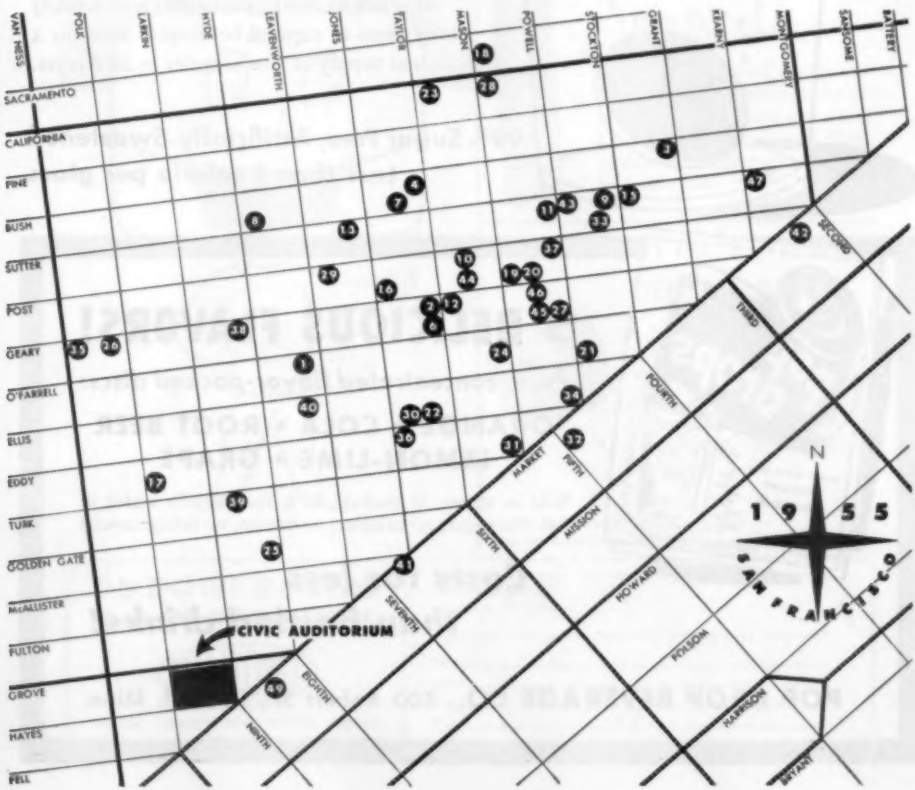
_____
(Name) (Address) (City) (State)

_____
(Name) (Address) (City) (State)

HOTELS IN SAN FRANCISCO

KEY NO.	HOTEL	SINGLE	DOUBLE
1	Alexander Hamilton	$6.50–10.50	$ 9.00–13.50
2	Bellevue		8.00–11.00
3	Beverly Plaza	6.00– 7.00	8.50– 9.00
4	Biltmore	5.00– 6.00	6.00– 8.00
6	Californian		8.00–10.00
7	Canterbury		6.00–10.00
8	Carlton		5.50– 6.00
9	Cartwright		6.00– 7.00
10	Cecil	4.00– 6.00	5.00– 8.00
11	Chancellor	5.50	7.50– 8.50
12	Clift	8.00–14.00	10.00–20.00
13	Commodore	4.00– 7.00	6.00–10.00
15	Drake Wiltshire	7.00– 8.00	7.50–10.00
16	El Cortez	5.00– 7.00	6.00–10.00
17	Embassy	4.00– 5.00	4.00– 7.00
18	Fairmont	10.50–16.00	13.50–19.00
19	Fielding	4.00– 7.00	5.00– 9.00
20	Franciscan	3.50– 5.00	5.00– 9.00
21	Golden State		5.00– 8.00
22	Herald		4.00– 6.00
23	Huntington	8.00–12.50	8.00–15.00
24	King George	4.00– 5.00	5.00– 8.00
25	LaSalle	5.00	6.00– 7.00

KEY NO.	HOTEL	SINGLE	DOUBLE
26	Lombard	$ 4.00– 6.00	$ 5.00– 9.00
27	Manx	5.50– 7.00	7.50– 9.50
28	Mark Hopkins	10.00–14.00	14.00–20.00
29	Maurice	5.00– 6.00	6.50– 8.00
30	Olympic		6.00–10.00
31	Oxford		6.00– 6.50
32	Pickwick	4.50– 5.50	6.00– 8.00
33	Plaza		7.00–10.00
34	Powell	3.50– 4.25	4.25– 6.50
35	Richelieu	4.00– 6.00	5.00– 9.00
36	Roosevelt	3.50– 5.00	4.50– 7.00
37	St. Francis	8.00–18.00	10.00–20.00
38	San Carlos		3.50– 5.00
39	Senate	4.00	5.00– 6.00
40	Senator	3.50– 3.75	4.00– 5.00
41	Shaw	4.00– 5.00	5.00– 6.50
42	Sheraton-Palace	8.00–13.00	10.00–17.00
43	Sir Francis Drake	8.50–14.50	10.50–19.50
44	Somerton	3.00– 4.00	4.00– 7.00
45	Spaulding	4.00	5.00– 6.00
46	Stewart	4.50– 7.00	6.00–12.00
47	Sutter	4.00– 5.50	6.00– 9.00
49	Whitcomb	5.00– 9.00	7.00–12.00



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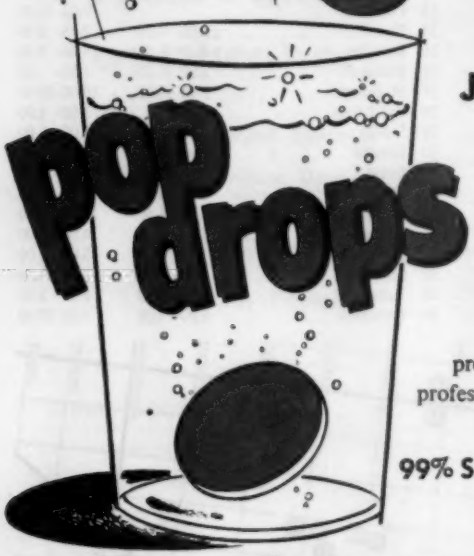

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*JADA. Vol. 47, P. 324-329, Sept. 1953. NELSEN, R. J., D.D.S.; PELANDER, C. E.; KUMPULA, J. W.: Hydraulic Turbine Contra-Angle Handpiece.

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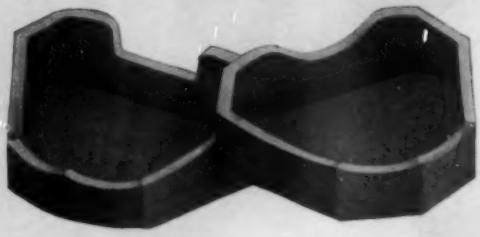

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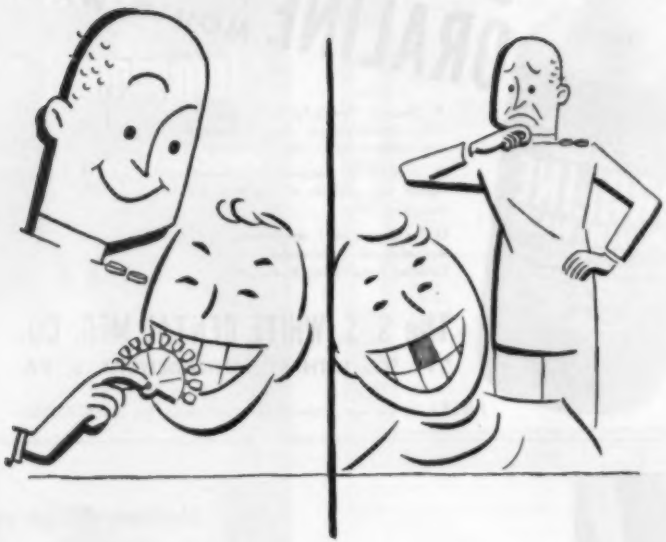

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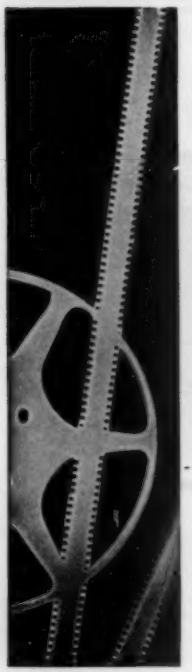

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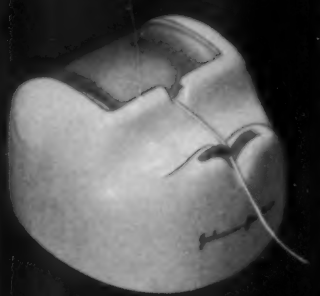

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PAN-PACIFIC DENTAL CONFERENCE

OCTOBER 24-25, 1955

IMMEDIATELY FOLLOWING THE A.D.A. ANNUAL SESSION IN SAN FRANCISCO

This is the only program officially connected with the Pan-Pacific Dental Conference; it is the Honolulu County Dental Society's official tour for visiting dentists. The scientific sessions and the President's No-Host Reception are open to all A.D.A. members. However, dentists wishing to enjoy the other parties, sightseeing trips, native entertainment, shows, dinners, inter-island tours, and special events organized by the Islanders for visiting dentists can do so only by joining this official tour of the Honolulu County Dental Society.

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TRANSPORTATION AND DATES: Departure: Friday or Saturday, October 20 or 21. Return: Sunday or Monday, October 30 or 31. Individual members may designate other dates, including choice of Lurline travel.

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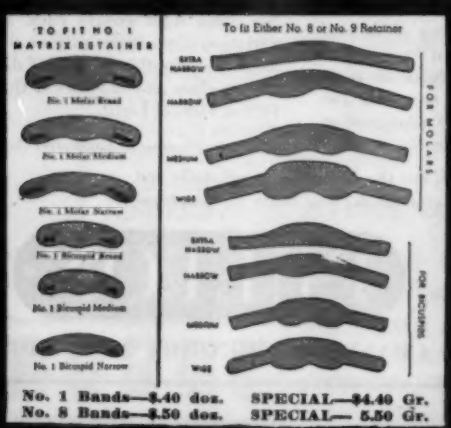

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MINNESOTA—Dentist wanted in McIntosh, Minn., a town of 1,000 population. No other dentist in town. Office for rent in new clinic building. Contact C. L. Roholt, M.D., McIntosh, Minn.

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NEW YORK—Opportunity oral surgeon in well-located medical building. Unopposed. Offices to specifications. Reasonable rental. Occupancy September 1955. Dr. David Lang, 101 Hillside Ave., Williston Park, L. I., N. Y. Phone Pioneer 2-3644.

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PENNSYLVANIA—Allentown dental office rooms for rent in business district, $95 per month, available June 1st. Write John W. Kessler, 241 N. 7 St., Allentown, Pa.

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TEXAS—Space available for orthodontist and pedodontist in pediatric center, southeast Texas. City is highly industrialized with 80,000 population. Excellent opportunity since there is need for well-trained specialists. Address A.D.A. Box No. 842.

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June graduate, married veteran, desires association in growing community in either Connecticut, New York or Massachusetts. Give full data: town size, type practice, equipment, hospital facilities, etc. Address A.D.A. Box No. 924.

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Experienced orthodontist, recently discharged from service, desires purchase of active practice or good location or group association. Willing to take necessary state boards. Address A.D.A. Box No. 923.

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California licensed dentist, 34, family man desires association or will purchase active practice. Just completed Navy service. Ten years' experience, seven in private general practice. Address A.D.A. Box No. 921.

Dentist, Michigan licensed graduate, desires purchase of active practice in Michigan. Would consider temporary association or association leading to purchase. Released from Navy June 1955 after three years' experience including accredited naval dental internship. Address A.D.A. Box No. 916.

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Holder of M.S. degree in orthodontics, desires location or association with purchase option, southern or central California. Nine years' general practice and hospital staff experience. Service completed. Available March 1956. Detailed information appreciated. Address A.D.A. Box No. 913.

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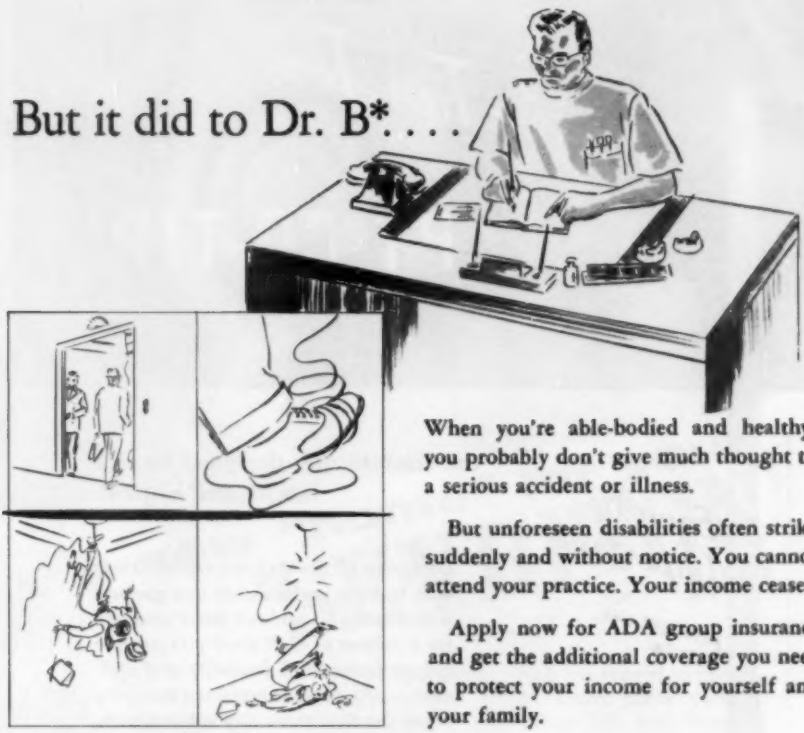

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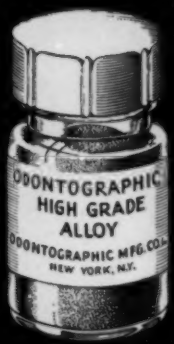

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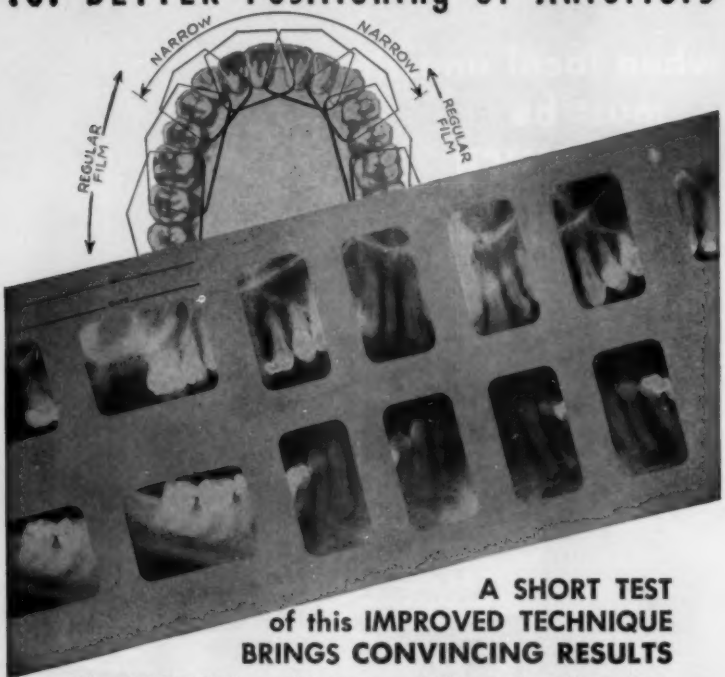

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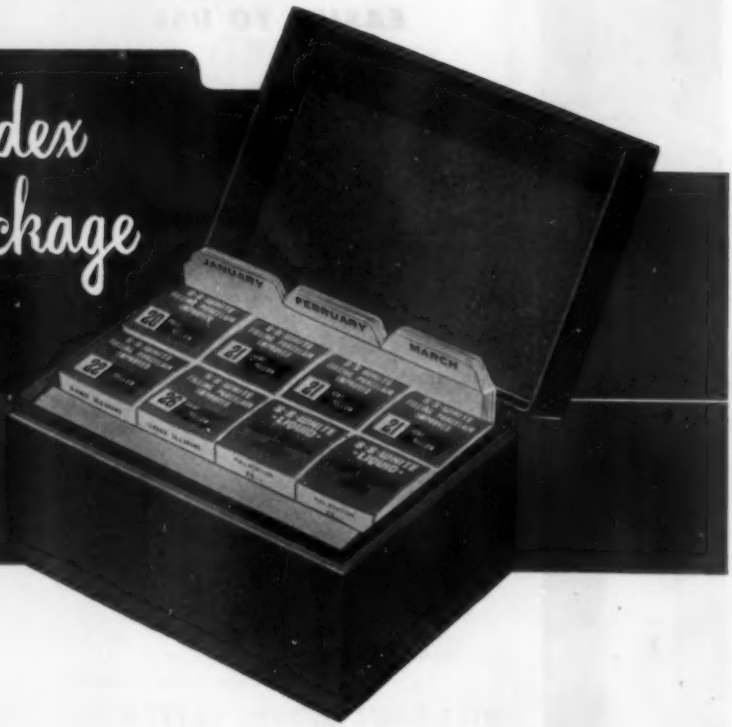

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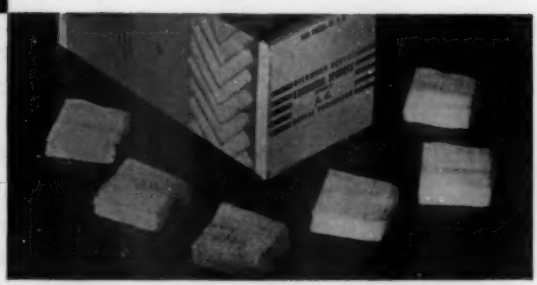

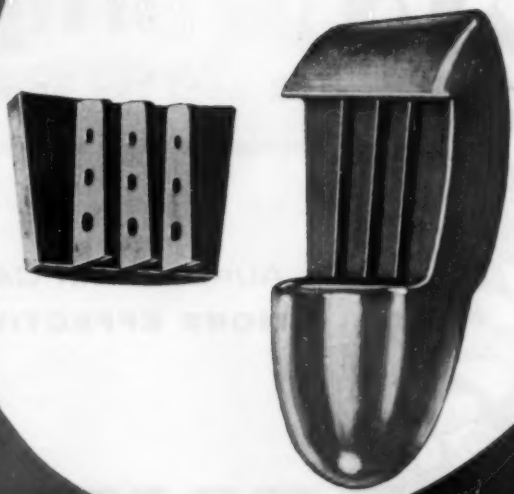

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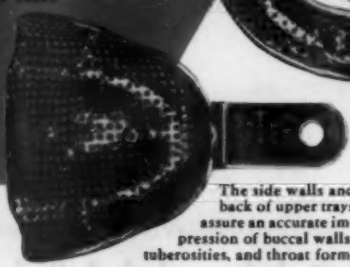

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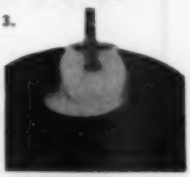
1.

Pin about to be lowered into cavity.

2.

Pin embedded in Kadon filling.

3.



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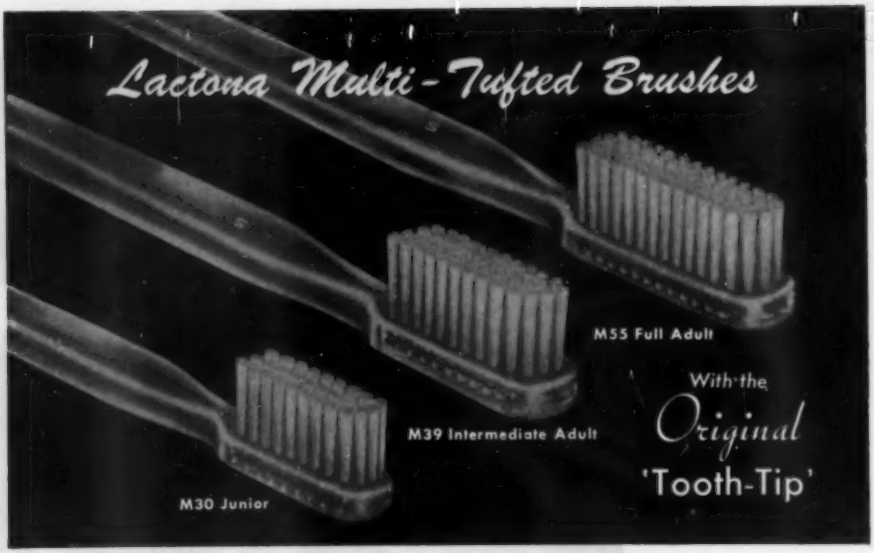

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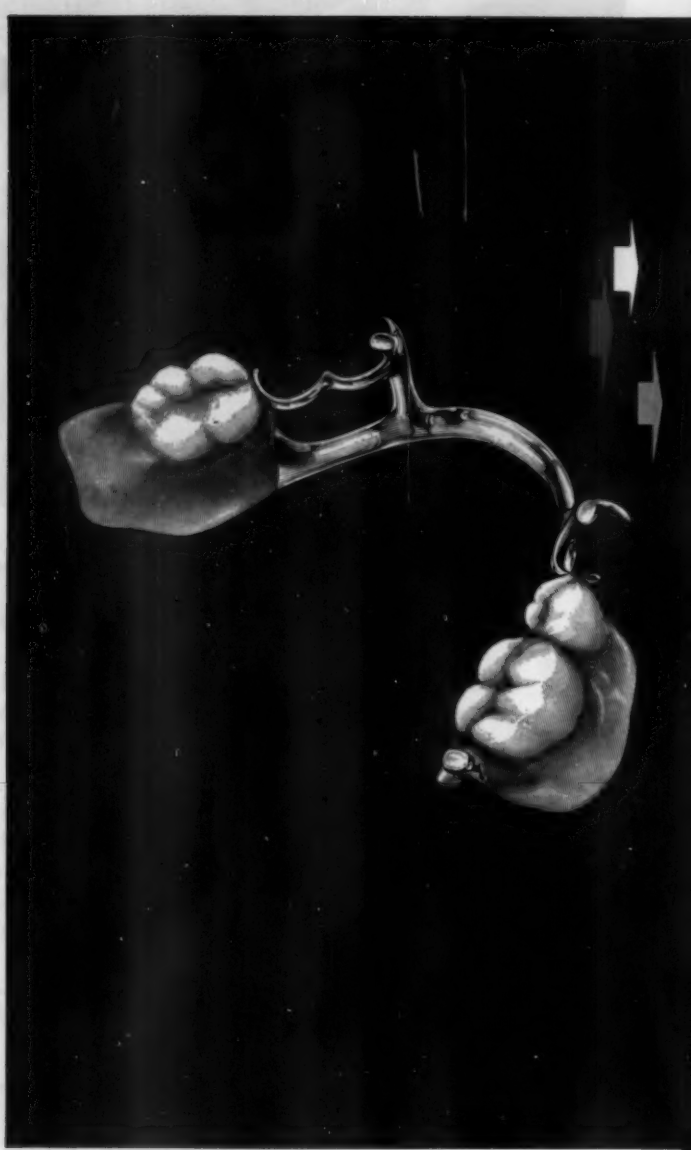

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1. Am. Dent. Assoc.: Diet and Dental Health, 1954, p. 8.
2. Thomas, A. E.: Oral Surg., Oral Med. & Oral Path. 7:741-749, 1954.

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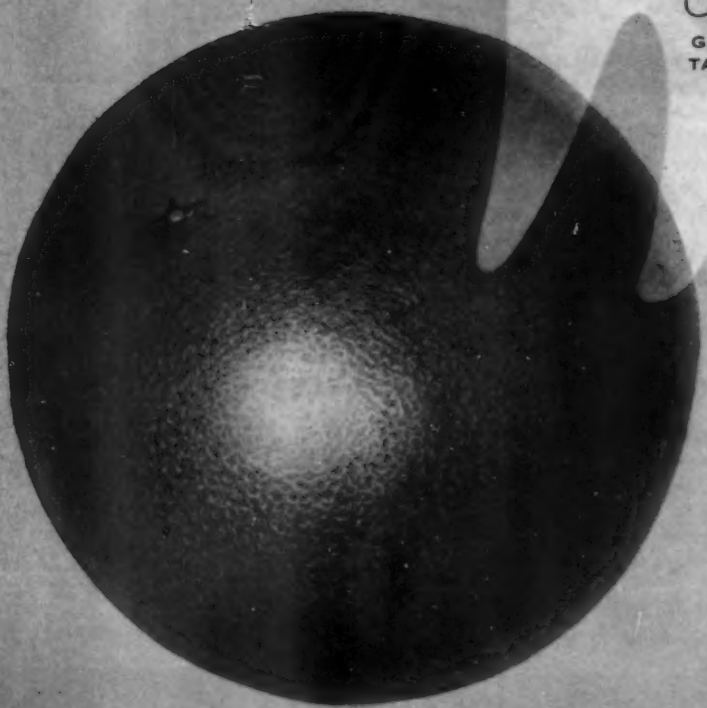

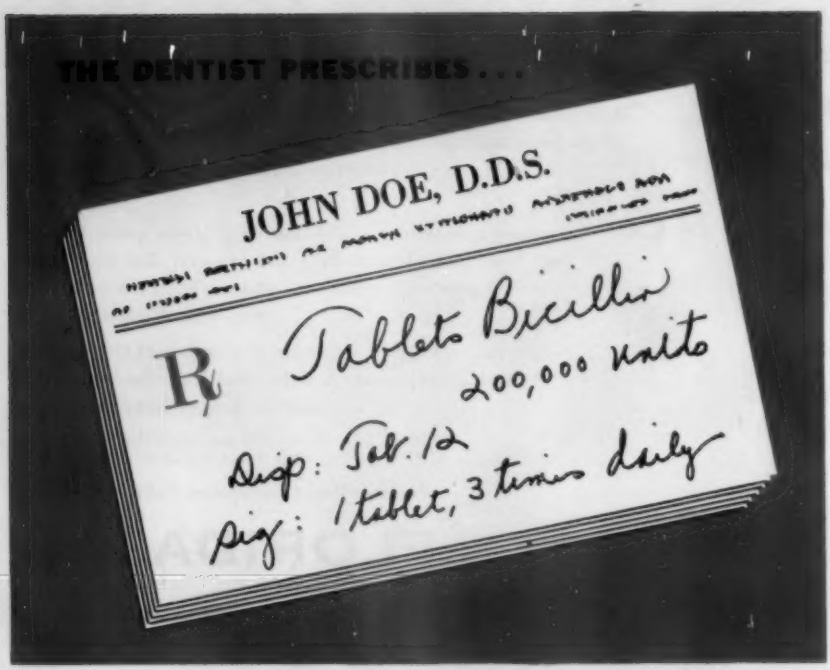

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1. Council on Dental Therapeutics: J.A.D.A. 49:715 (Dec.) 1954

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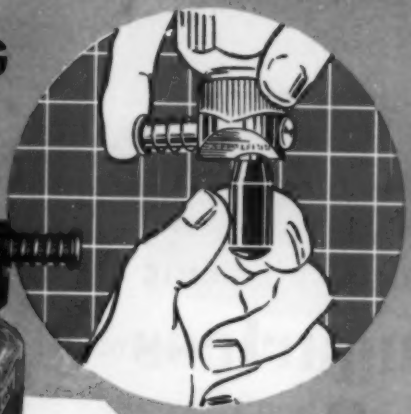

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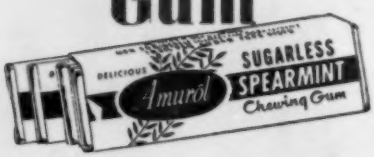

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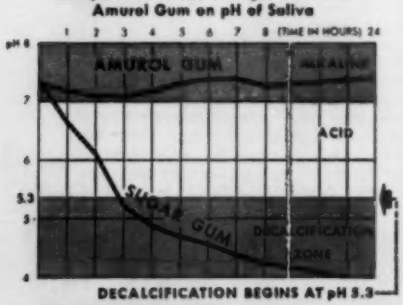

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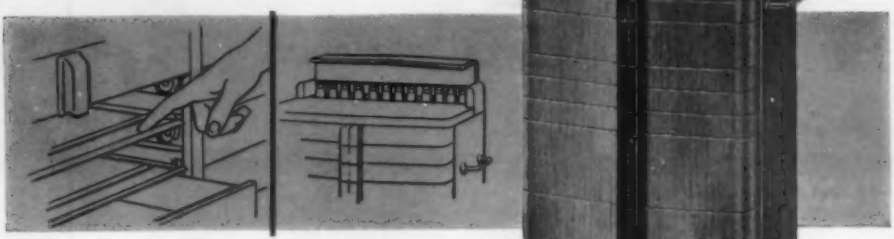

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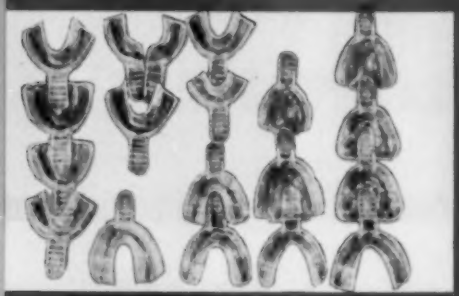

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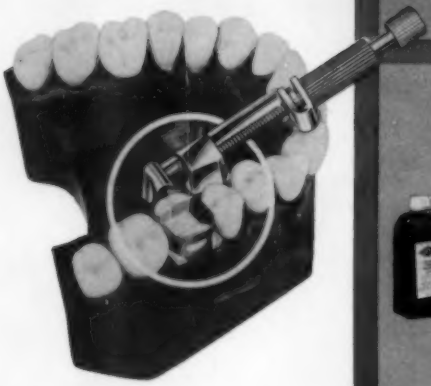

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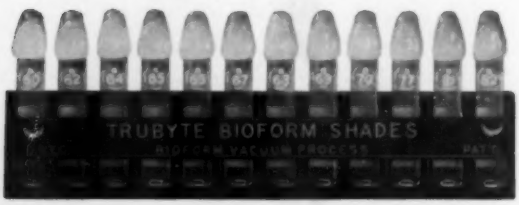

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